

ABSTRACT

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Mexico City is one of the largest metropolitan areas in the world, with a 2000km² and 22 million people. Due to its globalized economy and dynamic growth, the city offers better life opportunities, encouraging massive migrations from rural areas to the city. Hence, the need for more housing. A rapid result for housing demands has generated the growth of squatter areas as well as massive social housing complexes at the peripheries of the city. The city needs a reinterpretation of affordable housing typologies that address the housing demands of the underprivileged and impede the expansion of the city by utilizing the existing infrastructure into the central area. This thesis will focus on designing an affordable housing project that would relocate low income people in order to provide them appropriate services and infrastructure, thus integrating them to the city life through community spaces utilizing a language of design that reflect the construction techniques of the Mexican culture.

AFFORDABLE HOUSING: A CASE FOR MEXICO CITY

By

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Dedication

To Mexico City, my inspiration source.

Thank you to my Family, Thesis Committee and Friends for their patience and
unconditional support.

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“It is important to recognize the voices that energetically claim the recuperation of a community life which creates habitable spaces. Modern methods, materials and construction technologies which makes today’s housing are less expensive and easier for individuals to construct their own home... perhaps a truly habitable space cannot be fabricated by industrial methods, but only through the communal activity of craftsmanship”¹

-Ivan Illich

Chapter 1: Mexico City a Megalopolis

Mexico City is one of the most populated urban areas in the world, with approximately 2000km² and 22 million habitants. Its vast metropolitan area and overpopulation make the city a complex urban extension of overdevelopment and social decline². Like any other megalopolis, Mexico City has a physical and “population growth of 3 per cent”, which means that it has an accelerated rhythm of expansion and has been rapidly absorbing surrounding urban areas³.

Due to Mexico City’s accelerated and chaotic growth, the City is one of the areas with major social conflict. Housing is one of the main issues the megalopolis confronts; the city’s growth has been mainly a result of massive migrations from rural

¹ Ander-egg, Ezequiel. *Autonconstruccion y Ayuda Mutua*. Lumen, 1987,4.

² Mumford, Lewis. "The culture of Cities." 640. San Diego: Harcourt Brace & Company, 1996.

³ Legorreta, Jorge. "La ciudad de Mexico s Debate." 339. Mexico City: EON, 2008

areas to urban areas⁴ . From 1960 to 2000, the expansion of the city was caused in its majority by new housing projects, representing 70% of the new construction⁵ .

Extensive rural migrations and the global character of Mexico keep the capital in a dynamic growth and in need for more housing. The rapid need for more housing has been producing the creation of squatter areas in the periphery. These illegal settlements are constructed by low income people who cannot afford living in the central areas of Mexico City because of price. Such people are not entitled to receive benefits from governmental social housing institutions.

The accelerated overgrowth of the megalopolis has caused the city to merge with adjacent municipalities, thus increasing the urbanized land in the area, blurring borders, and increasing the demand of basic services, infrastructure, housing, and transportation. The disorganized growth and the transformation of rural lands into urbanized areas have caused strains on the environmental sources and have negatively impacted natural water and forest reserves which are essential to support life in the city.

⁴ Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su Desarrollo Urbano 521-2000." 325. Mexico City: Instituto Politecnico Nacional, 2003.

⁵ Legorreta, Jorge. "La ciudad de Mexico a Debate." 339. Mexico City: EON, 2008.

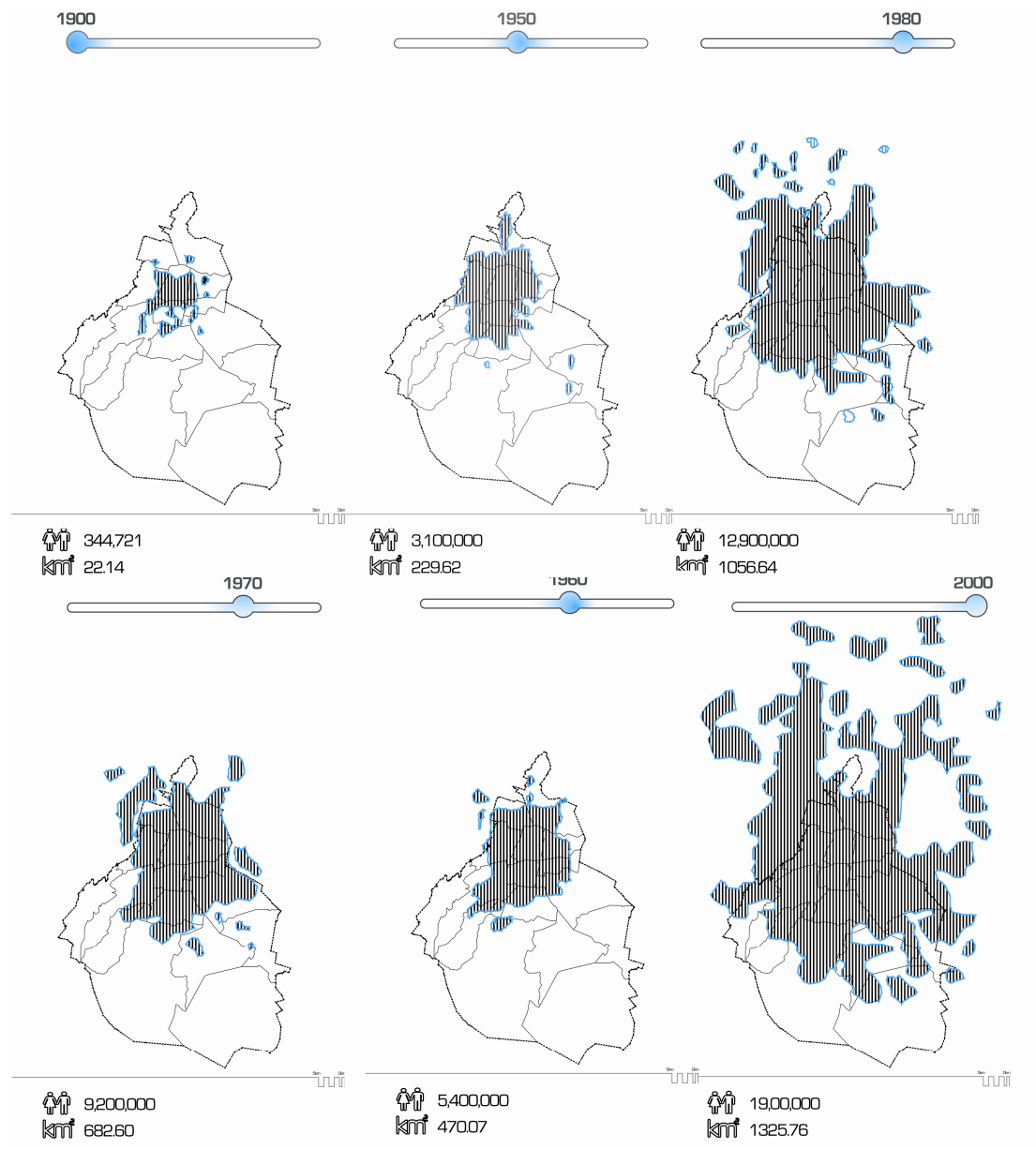


Figure 1 Mexico City Growth. Diagram representing human growth from 1900 to 2000 [Image Provided by the author, with information from Legorreta, Jorge. "La ciudad de Mexico a Debate."]

Mexico city is highly globalized and although Mexico is a developing country, there are “spheres of the first world within the city” However, only a small percent of the population is wealthy .Social strife is a constant issue and economic gaps are reflected in every aspect of the citizens lifestyle - the most evident is housing. As it occurs in many developing countries, the people with the lowest income struggle to survive within urban areas; they are segregated and are left to occupy areas that are not suitable for housing construction.

The city needs a reinterpretation of housing typologies. Therefore, this research project proposes affordable housing that is sensitive to the conflicts the city confronts and that, in theory, would present a more coherent solution to the demands of housing for people living in poverty. The main thesis proposal is to promote a relocation of people living in squatter areas by providing affordable housing in central areas of the city, which are already equipped with suitable infrastructure and can sustain housing projects. The purpose to relocate people living in squatter areas in the periphery is primarily to cause the integration of people of low means into the core of the city, offering them basic infrastructure services as well as opportunities that can help them improve their economic situation and quality of life. Secondly, the thesis project would take place in areas that are currently undergoing an urban renewal process, mainly formerly industrial zones, which tend to be low-priced and are equipped with services that can support housing. The objective is to decrease the expansion of urban land into the periphery and decrease the impact of over construction on the environment. Moreover, the intention of the proposal would be to cease the chaotic growth of squatter areas by providing humane living conditions and

mitigating social gaps. Finally, the research will focus on a housing project that would be responsive to the culture and idiosyncrasy of low income people in Mexico City; a housing proposal that utilizes the entropy of the City produced by self-construction as a language for the parameters of design; and a project that understands and reflects the user's culture and desire for individuality.



Figure 2 Mexico City Growth [Image Provided by the author]

The proposal for prototype of affordable housing would be an implementation of two construction cultures. The overall frame of the building would be designed and developed, while the individual units would be a result of spontaneous manufacture constructed by the residents. The frame would provide a sound structure that would nurture with infrastructure the individual units; the units would work as infill compositions that would reflect the individual's necessity of expression and individuality. Allowing individual owners to construct their units would ideally reduce the construction price of the overall building, and the individual units cost would depend on the owner's capital for investment or sweat equity. Initially, the

units would be austere and with low cost scrap or recycled materials. The intention is that throughout the time the dwellers would invest in their housing units and improve the construction materials of such units. Through the investment and self-construction of the units, the dwellers would feel attached to their environment. Consequently, they would be more prone to maintain them and protect their unit and building. Moreover, people that feel identified with their environment tend to have higher level of satisfaction.⁶

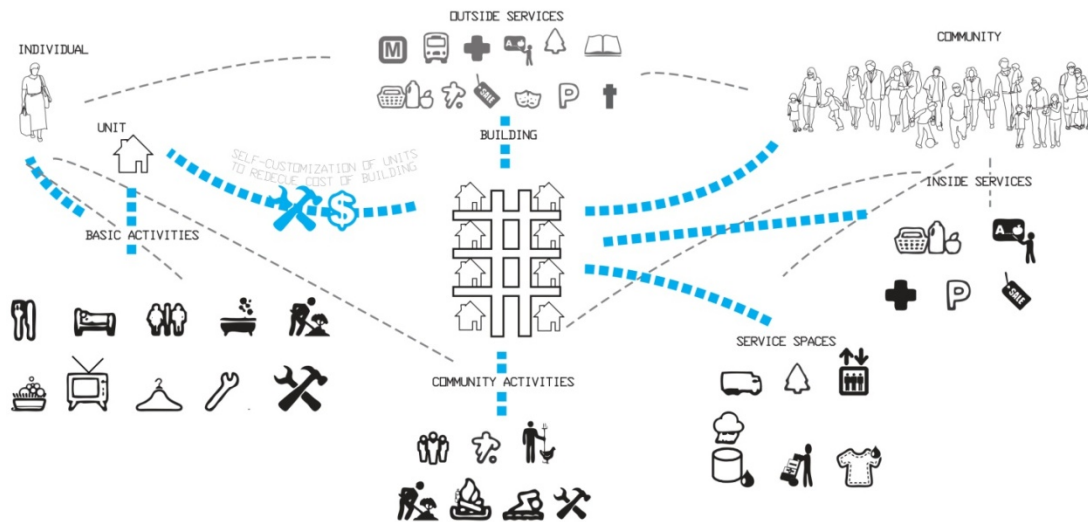


Figure 3 diagram envisioned activities generated by housing project design. [Image Provided by the author]

Historic Background.

The city is a complex juxtaposition of architectural and urban philosophies that have merged throughout the history of the city and given birth to a rich variety of

⁶ Fleury-Bahi, Ghonzale. "Process of place identification and residential satisfaction."

architectonic expressions and urban spaces. These influences are genuinely reflected through all layers in the city.



Figure 4 Layers of history: Aztec, Colonial Spanish, International. [Image Provided by the author]

The history of Mexico City begins with the development of the Aztec capital Mexico- Tenochtitlan which was built on numerous islands in a lake formed by water draining from the surrounding mountains that forms an alpine valley⁷. By 1325, the Aztec tribe started to adapt the conditions of a small island in the middle of the lake

⁷ Opher, Philipp. "Mexico City." London: Ellipsis, 200.

Texcoco in order to develop the capital of their new empire⁸. The Aztec civilization chose this location because of its fertile soils which allowed their empire to flourish due to growth in agriculture, and thus wealth. They achieved success thanks to mild weather conditions that allowed harvesting crops year round.

After European discovery of America in 1492, the Kings of Spain began an intensive process of exploration and conquest. Hernan Cortes de Monroy y Pizarro was appointed to lead an expedition to colonize of American territory. He arrived in Mexico City in 1519 invited by the Aztec emperor Montezuma. Upon his arrival in Tenochtitlan, Cortes estimated a city with a population of 200,000 people. Tenochtitlan was considered a high – density Mesoamerican city with a density of 157.4 in an area of 1350 ha and a population of 212,500⁹; since pre-Columbian times, Mexico City was the major economic and cultural center. It took Cortes and his army two years to take over the city. As a result of the Spanish conquest, in 1521 the Aztecs were defeated by the Spanish, and by 1522 the Spanish began to edify a new colonial city over the Aztec capital and renamed Tenochtitlan as Mexico City. Spanish colonizers began a process known as “*la traza*”, under the ordinance of the Laws of Indies; utilizing the preexisting Aztec grid as the foundation for the new Spanish City, they began by demolishing Aztec buildings and erecting Spanish colonial towns with the use of recycled materials from preexisting buildings. The purpose of rebuilding the city was to establish the Viceroyalty of New Spain, in order to have control over the conquered territory and a military base to plunder the wealth of the Aztec

⁸ Gendrop, Paul. In *Prehispanic Art in Mesoamerica*. Trillas, 1974.

⁹ Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su Desarrollo Urbano 1521-2000." 325. Mexico City: Instituto Politecnico Nacional, 2003.

empire¹⁰. During the conquest and invasion, the Spaniards began a process of destruction to the equilibrium of the city and its natural resources; part of it was caused by a process of water drainage in order to increase the *terra firma* and support growth, which was not completed until 1903¹¹. The new Spanish city was placed over the Aztec city not only for strategic political and military reasons, but also for utilizing the preexisting infrastructure. The city was transformed and improvements to the physical environment were made to resolve issues of growth and new technologies, although the city was not completely prepared to support future growth. Until the 19th century, the city had significant problems with supplying drinkable water, street networks, and plagues¹².

From the creation of the New Spanish capital, Mexico City was shaped by an urban pattern of segregation. The colonizers began a construction of palazzos and colonial housing at central areas while the remaining native people were relocated to the periphery of the city and forced to live in poverty in areas unsuitable for housing.

The city continued to develop and grow but it was not until the 19th century that a pattern of growth was evident caused by massive migrations of surrounding towns. These migrations were caused by nationalization of capital assets and economic growth due to the creation of industries supported by construction of train lines¹³. Industrialization generated the need for the increment in housing, which

¹⁰ Olmos, Carlos Chnafaon. "Historia de la Arquitectura y el Urbanismo Mexicano." Vol1. Mexico: Fondo de Cultura Mexicano, 1997.

¹¹ Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su Desarrollo Urbano 1521-2000." 325. Mexico City: Instituto Politecnico Nacional, 2003.

¹² Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su Desarrollo Urbano 1521-2000." 325. Mexico City: Instituto Politecnico Nacional, 2003.

¹³ Almandoz, Arturo. "Latin American Capital Cities 1850-1950." Routledge: Oxford, 2001.

resulted in the development of housing for workers near factories. So, in order to provide large numbers of units, high density housing was developed.

During the mid of the 20th century, the modernization and economic growth of Mexico City marked another phase for expansion produced by the increment of foreign and national industries as well as the construction of public works among them highways and metro railways which produced employment¹⁴.

In the 21st century, Mexico City finds itself in the midst of globalization and by far continues to be the main economic hub of the country. During the late 20th century and the early 21st century, several reforms have started to decentralize the economy of the country, in an effort to redistribute the wealth to other areas out of Mexico City. Mexico City has gradually become a city for service sectors instead of an industrial core. Nevertheless, the services and employment opportunities generated in Mexico City are yet to compare to the situation in other states. This fact remains the main reason for the Federal District to continue attracting people to move into the city.

¹⁴ Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su Desarrollo Urbano 1521-2000." 325. Mexico City: Instituto Politecnico Nacional, 2003.

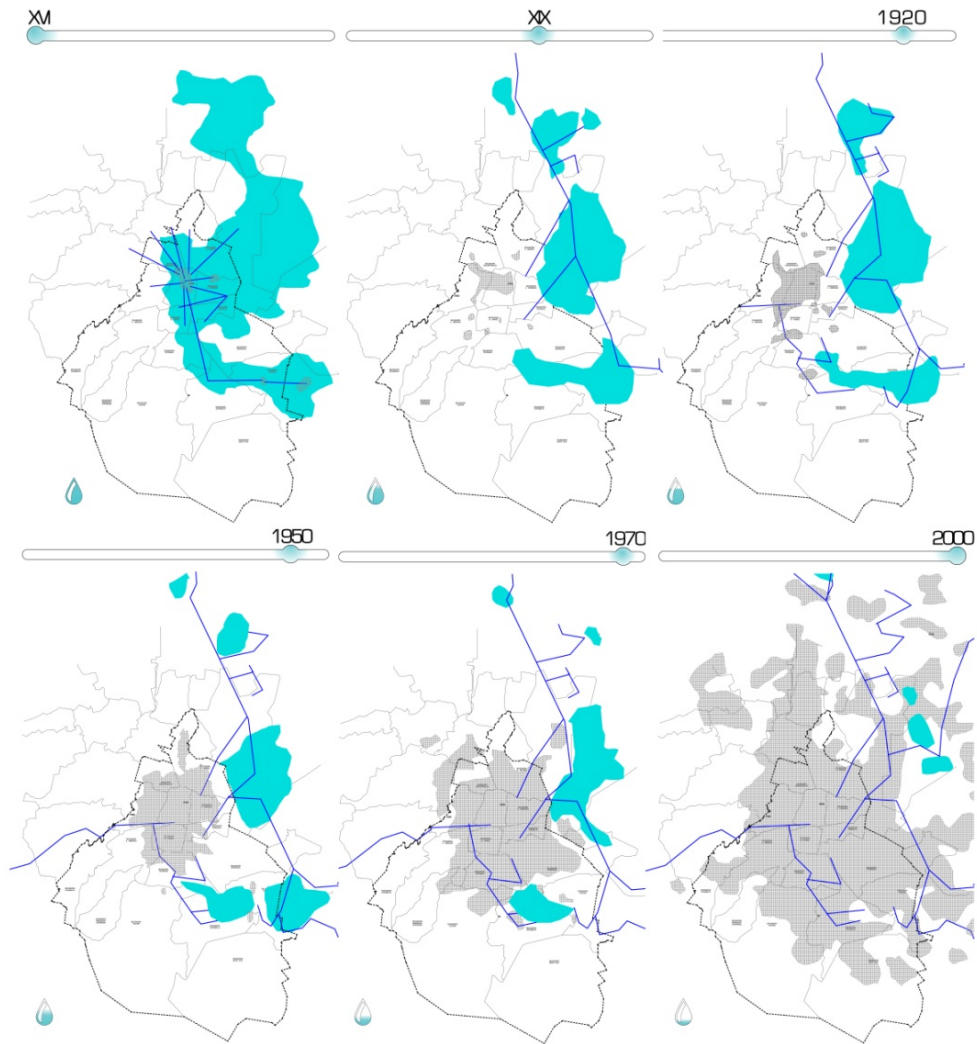


Figure 5: Mexico City Growth. Diagram overlapped with the drainage of the original lake system. [Image Provided by the author with information from ZMCM]

Geographical characteristics.

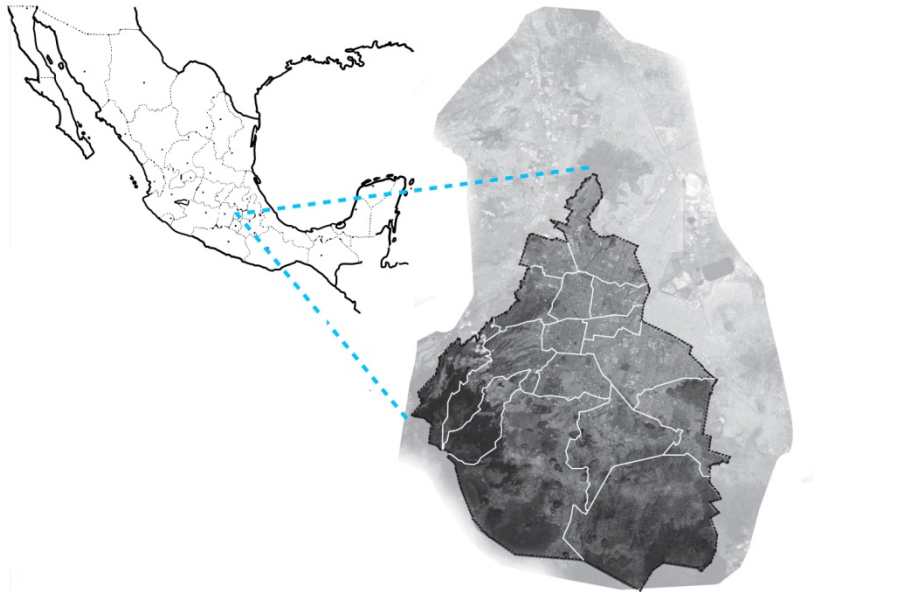


Figure 6 Location. [Image Provided by the author]

The Federal District is located within the Tropic of Cancer at a latitude of 19° 30', but at an altitude of 2240 meters (7350 ft). The climate is rarely very cold in winter while frequent showers keep the weather cold in summer. The temperature rarely drops below 40 degrees Fahrenheit (40 F) or rarely reaches above 80 F. Moreover, throughout the year there are no significant weather variations causing no marked seasons. Due to the extensive area of the city, several microclimates can be found: the north portion of the city tends to be drier and hot with a condensation of air pollutants; the south is humid with marked weather fluctuations and less polluted thanks to natural reserves. The central area of the city is located in a transitional zone between a humid and dry area, and it is also located in depression which causes almost no wind flow and stationary air pollutants.

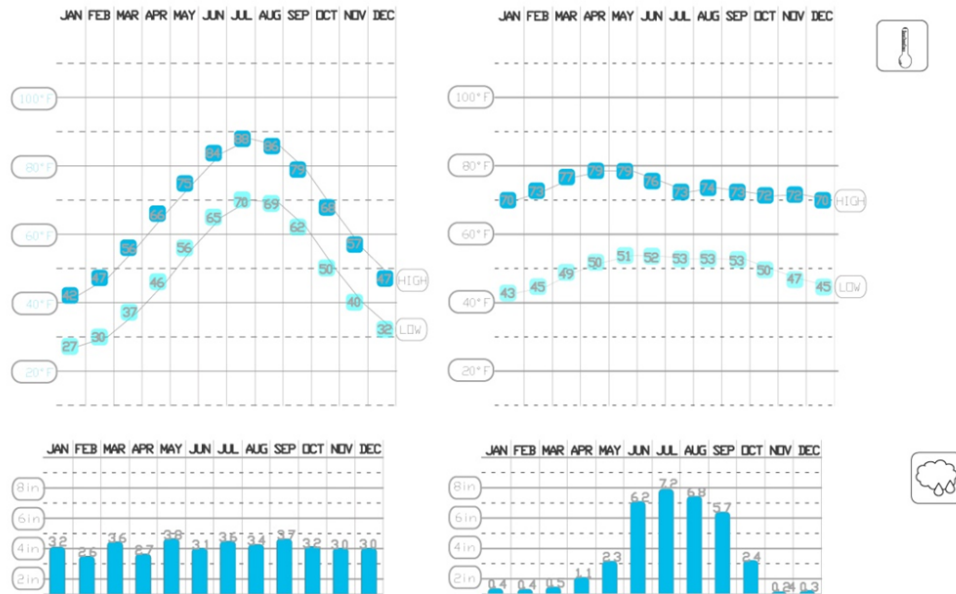


Figure 7 Temperature and Pluvial Charts. Comparison between DC and Mexico City. [Image Provided by the author]

Due to the mild weather conditions in the city, there is no need for HVAC system; housing in Mexico City is cooled through cross ventilation.

The geographic characteristics of Mexico City caused many inconveniences from its conception, and they present a major repercussions on the city life until today. The city was placed in a lake, in a highly seismic zone with flooding during periods contrasted by months of draughts¹⁵. Moreover, the constant extraction of water from the aquifers and lakes system for human use has led to a gradual sinking of the core of Mexico City, causing several cracks to appear through the peripheries of the central area. Currently, 80% of the total of rain water in Mexico City is unutilized, and the massive paved urban areas avoid the absorption of water into the

¹⁵Legorreta, Jorge. "La ciudad de Mexico a Debate." 339. Mexico City: EON, 2008.

aquifers¹⁶. In the city, 54% of the water is destined for domestic use, and water supply is diminished during dry seasons, affecting predominately poverty areas¹⁷.

During the rainy season, the city captures and average of 6.8 in which could be utilized through weather capitation methods to supply housing demands and compensate for the heavy use of water during drier seasons.

Demographic and socioeconomic characteristics.

Depending on what are considered the boundaries of the metropolitan area of Mexico, the City supports a population of approximately 18, 404, with a density of 2,524/km or 15,410.4/sq mi. The vast majority of the population is underage, a fact that creates the need to design recreational spaces that address this age range.

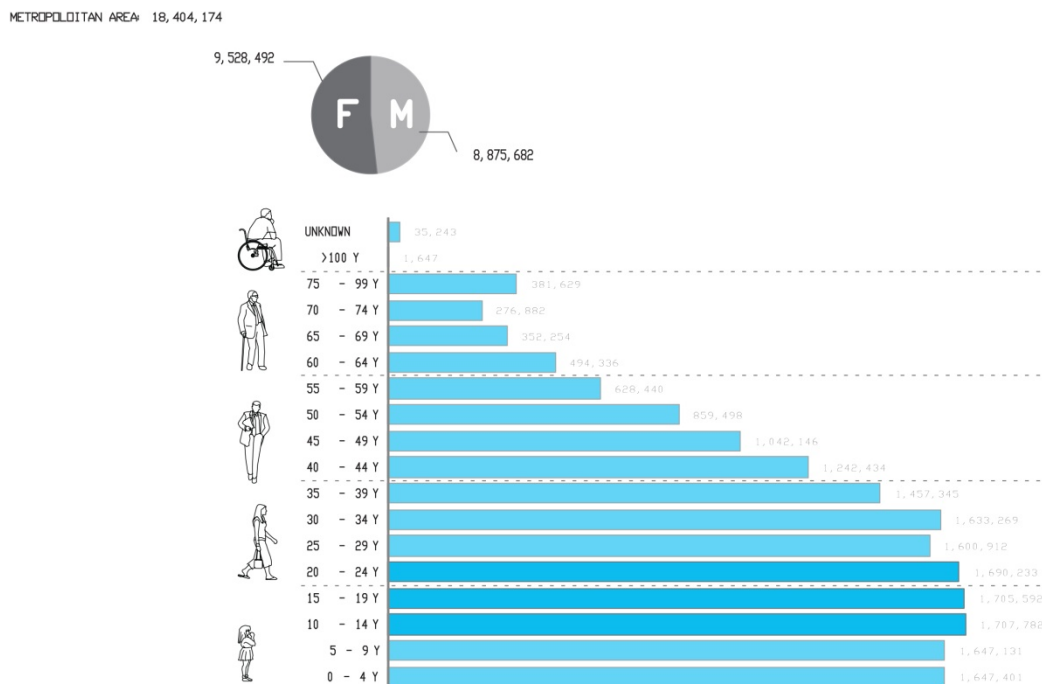


Figure 8 Mexico's City Population. Reflecting how the Metropolitan area is composed by a young population. [Image Provided by the author] with information from

¹⁶ Legorreta, Jorge. "La ciudad de Mexico s Debate." 339. Mexico City: EON, 2008, p214.

¹⁷ Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su

Approximately sixty to seventy five percent of the population that live in Mexico fall beneath the poverty line, receiving less than five minimum wages or getting paid less than four dollars an hour. Moreover, people with informal jobs generally often earn less than the minimum wage established by the National Commission of Minimum Wages.¹⁸ With hardly any means of egress, underprivileged people cannot afford basic services, let alone proper housing. The fact that a big portion of the population of Mexico City is underage and they are living in poverty indicates that most children are not getting adequate services to succeed in life. Consequently, poverty is inherited from generation to generation.

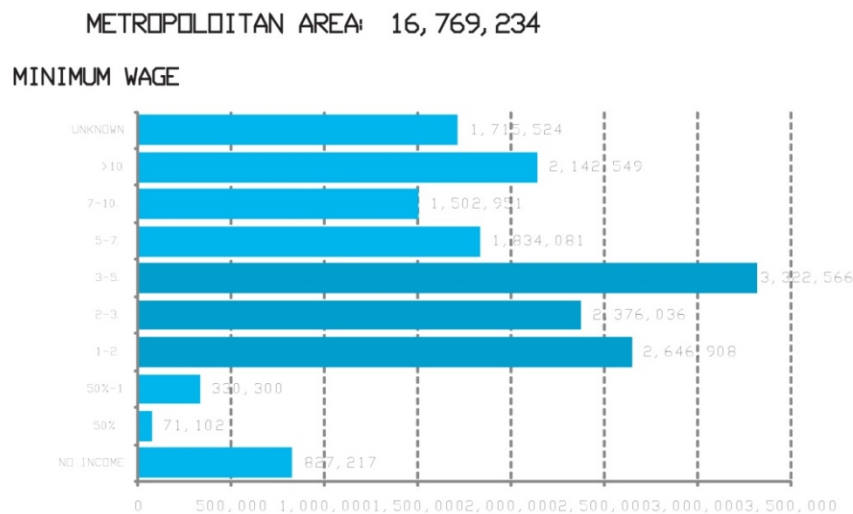


Figure 9 Chart of Income per Household in the Metropolitan Area [Image Provided by the author with information from the INEGI]

¹⁸ *Instituto Nacional de estadística y geografía*. 2009. <http://www.inegi.org.mx/inegi/default.aspx> (accessed 2009).

The job query through the metropolitan area reflects diversity in services; nonetheless, only a few people have access to higher levels of education. The vast majority perform services oriented to construction and trading. The fact that a big portion of the population works for construction and crafts services means that they are skilled to build their own housing projects.

Throughout the Metropolitan area of Mexico City Mexican women still have a weak role in the economy of the country, there is a significant amount of women who are unemployed and in the majority of household men are still the main providers.

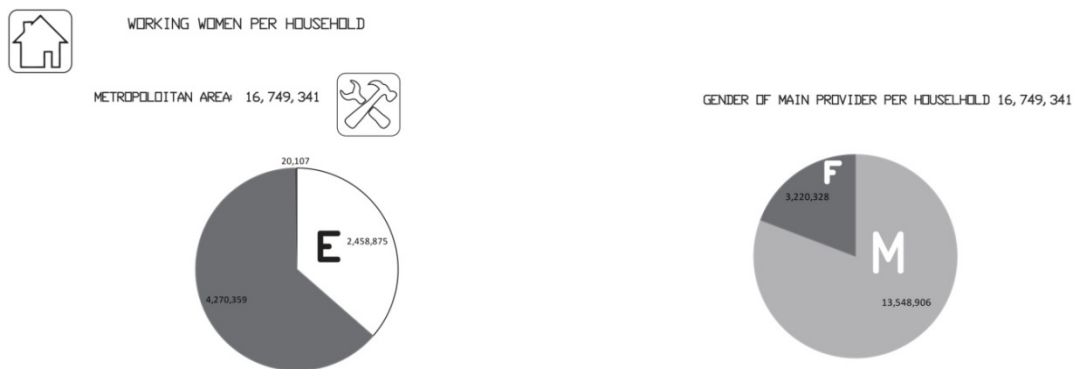


Figure 10 Female employment per Household [Image provided by the author with information from the INEGI]

Providing women with appropriate housing and basic services such as health centers, day care centers, and wellness centers can help females to improve their quality of life and give them the means to become economically independent.

Chapter 2: Housing situation.

Since the 1960s, Mexico City has undergone a process of expansion; 70% of the city's growth is due to the construction of new housing¹⁹. The majority of the population that originally inhabited the central area of Mexico City moved into the peripheries and into adjacent municipalities, causing the restructuring of the city's borders. In the last decade, the metropolitan area of Mexico City grew a total of 37% with 2 thousand square kilometers. The growth and accelerated construction deeply affects the recharge of the aquifers, by blocking water infiltration into the subsoil; 70% of the water utilized for the citizen's use comes from the water aquifers. Some of the reasons of the expansion were the result of structural damage to buildings caused by series of earthquakes in 1985, which triggered groups of the population to move out to the south where the subsoil was formed by volcanic lava, thus providing firmer settlements. Another important reason was an increment in the cost of land in central areas, causing some neighborhoods to change their land use from residential into mixed commercial and office, forcing people to move to areas of low cost for construction and living. Finally, the last reason was a massive migration of people from rural areas moving closer to the city in search of opportunities and better life conditions unfortunately illegally settling in areas destined for agriculture or ecological preservation²⁰.

The depopulation of the central area generated conflicts for the entire city. With the displacement of people into the peripheries, it reduced the zones of ecologic preservation with forests and aquifer recharges, and the people who could maintain

¹⁹ Legorreta, Jorge. "La ciudad de Mexico a Debate." 339. Mexico City: EON, 2008.

²⁰ Legorreta, Jorge. "La ciudad de Mexico a Debate." 339. Mexico City: EON, 2008.

these services abandoned the areas with better infrastructure. Areas well equipped with better roadways, metro systems, parks, hospitals, theaters, cinemas, and other infrastructures were transformed into low density areas. In 1997, the government began a policy in order to repopulate the central area, creating a program of urban ordinance that produced incentives to increase the density of the central zone. The general purpose of this ordinance was that large habitation and commercial complexes were to be developed and oriented to cater the central area of the city and thus attract people ²¹ .

Since the year 2000, the land use of the central area of the city has changed significantly where housing complexes have rapidly begun to repopulate the central area. The central area has undergone a significant recycling of land use, changing from industrial to residential use. The boroughs that occupy the central area were occupied by a 38% industrial, 12% demolished housing units, and 12% warehouses. Unfortunately, the repopulation of the central zone of Mexico City caused a reduction of the construction of affordable housing and an increase of the cost of land, especially affecting the sector of the low income population. In this context, many social housing agencies transferred their bids to middle income clients. In 2001, affordable housing reduced from an average of 56 square meters to 49 square meters per unit. The increase in price caused developers to increase the density in construction, reducing the size and increasing the number of people living in these complexes, thus deteriorating their quality of life. From 2001 to 2005, the price of social housing increased between a 43% to a 28% in average increasing its price from

²¹ Legorreta, Jorge. "La ciudad de Mexico a Debate." 339. Mexico City: EON, 2008.

344 thousand to 470 thousand Mexican pesos (26 thousand to 36 thousand American dollars)²².

The cost of housing is determined by many factors, although infrastructure is the most essential. The areas that allocate social housing with the prices below 240,000 pesos are located in the outskirts of the city, which not always provide the appropriate infrastructure. Many social housing complexes that are built in the peripheries of the city build up to 25 thousand units per complex, increasing dramatically the urban sprawl even into mountainous areas that are not safe and sound to construct. Squatter housing thus not only becomes a menace to the environment but also represents a risk for the safety of public life. Furthermore, INFONAVIT and FOVISSTE, the governmental agencies providing social housing, only benefit a certain sector of the population, more specifically workers affiliated or registered under the government with permanent jobs; this ensures they can gradually pay back housing loans. Most of the people that migrated from rural areas into the city are not employed under legal premises or their jobs are not recognized by the government, a fact leaves them without the option for acquiring any benefit from social housing institutions. Elevated prices in social housing, especially the ones located in central areas, impose a big limitation for people in poverty. Thus, the social housing market is oriented to middle class who are able to offer the guarantee of payment for loans²³.

²² Legorreta, Jorge. "La ciudad de Mexico s Debate." 339. Mexico City: EON, 2008.

²³ .Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su Desarrollo Urbano 1521-2000." 325. Mexico City: Instituto Politecnico Nacional, 2003.



Figure 11 Affordable Housing Paradigm. Originally intended to be a mixed income development but only afforded by middle and upper middle class sectors. [Image Provided by the author]

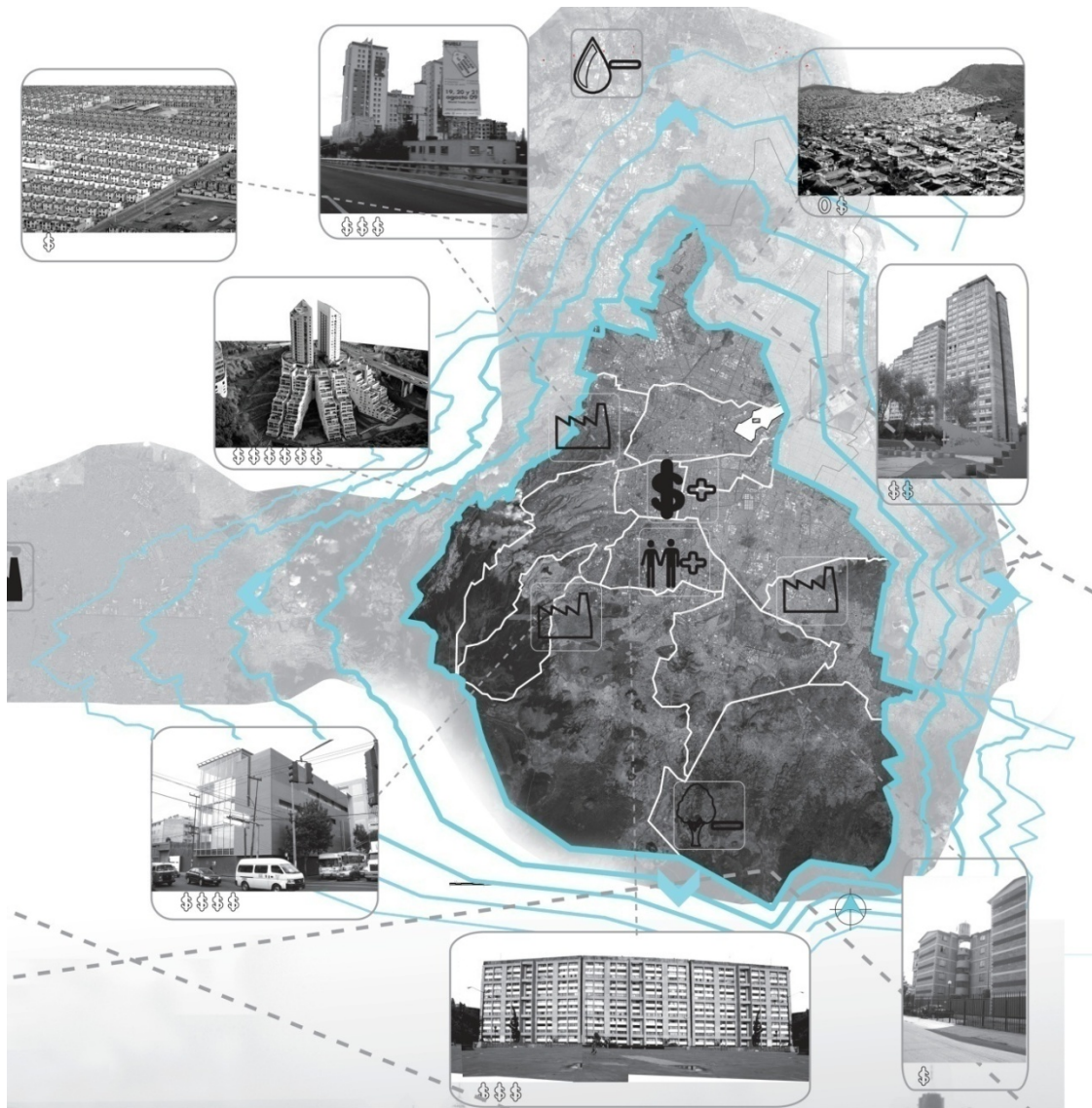


Figure 12 Housing paradigms. The diagram illustrates a variety in cost of high density units in the Metropolitan area. [Image Provided by the author]

These factors have caused the sector of the population that falls below the poverty line to live above all in urban marginal areas such as the slums of Mexico City. Little has the segregation pattern changed since the Spanish colonization. The people of less means are forced to occupy areas that are not suitable for housing, the

slums or lost cities have always been segregated areas prone to flooding and land sliding²⁴.

Housing for the Poor.

The first efforts to create formal social housing occurred under the influence of housing ideals for workers in the 20th century. During this period, highly crowded rooms rented properties, called *vecindades*, and provided housing for the poor. These *vecindades* were composed by a narrow central patio that all units shared. With intensive industrialization and concurrent urbanization after 1940, peripherally located popular neighborhoods or “*colonias populares*”, which are irregular settlements comprising self-built dwellings, emerged as the main lower middle and low income housing option.

The United Nations identified five types of low income housing settlements that occur within the city. Most of these settlements are considered and account for the majority of informal housing, which is developed with self-built methods and where the properties were illegally possessed.²⁵

Ciudades perdidas, lost cities or popular neighborhoods, are the main dominant housing conditions in the newer or unconsolidated irregular settlements. They are created form the result of unauthorized land development and construction, with deficits in urban services, often in high risk areas and with dubious property

²⁴ Almandoz, Arturo. "Latin American Capital Cities 1850-1950." Routledge: Oxford, 2001.

²⁵ "The Challenge of the Slums, Global Reports on Human Settlements." 2003.

titles. Most settlements in lost cities will be improved to a certain degree as property is regularized, infrastructure and services are placed, and houses are gradually transformed from scratch and recycled materials into concrete and brick dwellings. Yet, the popular neighborhoods never truly become completely regular. Legalized properties become irregular again through inheritance, decay, or economic problems. Irregular settlements constitute roughly half of the urbanized area and house more than 60 per cent of the population²⁶.

Inner-city rental slums, *or* *vecindades*, date from the late 19th century and comprise houses abandoned by wealthy owners. These old patio houses are retrofitted, and converted to apartment buildings for the poor by subdividing rooms. This type of housing provides a model for affordable rental housing. After the 1940s, the production of rented *vecindades* continued in the peripheral irregular settlements; but here, unlike in the inner city, the landlords are often slum dwellers themselves. About 10 per cent of all housing in Mexico City is located in *vecindades*, although many have gradually disappeared, especially the ones in downtown Mexico City, because they have become structurally unsafe.²⁷

Deteriorated public housing projects: many formally produced and designed by renowned architects, subsidized by some social housing agencies, and built for the working classes have but become highly deteriorated, with overcrowding and other social problems. As much as 15 per cent of Mexico City's population now lives in financed housing projects of variable quality.

²⁶ "The Challenge of the Slums, Global Reports on Human Settlements." 2003.

²⁷ "The Challenge of the Slums, Global Reports on Human Settlements." 2003.

The vast majority of the settlements' occupants are homeowners. Only 7 per cent of the housing in the worst areas is rented, compared with a metropolitan average of 17.3 per cent. In the central areas, the traditional vecindades and other rental accommodations continue to lose population and to be destroyed due to ageing and land-use changes.²⁸

Social housing projects throughout Mexico City are gradually becoming squatter areas. Social institutions are unable to administrate public housing complexes, leaving these units under the control of the residents. Often these spaces suffer degradation. Moreover these housing elements become symbols of poverty and marginalization. Social issues rise in this residences, unemployment, crime and substance abuse are some common characteristics in this type of environments.²⁹

The city is growing disproportionately to demographic increase, accommodating smaller families and an ageing population in the central area. Nevertheless, most of the city has been built now, and what happens within existing neighborhoods will determine the quality of future habitat for the majority of the poor. The original problems here of unstable construction, risks of landslides or flooding and insufficient services are compounded by deterioration and overcrowding. The advantages of irregular settlements are flexibility and relatively

²⁸ "The Challenge of the Slums, Global Reports on Human Settlements." 2003.

²⁹ "The Challenge of the Slums, Global Reports on Human Settlements." 2003.

large plots that accommodate extended families and second or third generations



Figure 13Image of the different phases of informal settlements. The Furthestmost housing are built with scarp materials with metal, cardboard and plastic components. The houses in the background have been gradually transformed into brick and concrete structures. [Image Provided by the author with information from the INEGI]

About two-thirds of Mexico City's population lives in lost cities; but by no means should all be considered to be 'slum dwellers'. In fact, most colonial contains some degree of social heterogeneity. The distinguishing characteristic of the slums is the absence of middle and high income families. Ideally, neighborhoods should be designed to promote a variety of incomes, which tend to have positive social effects on the environment and help to mitigate the social ills of poverty.³⁰

³⁰ Fritz, Wagner. "Revitalizing the city: strategies to contain sprawl and revive the core."

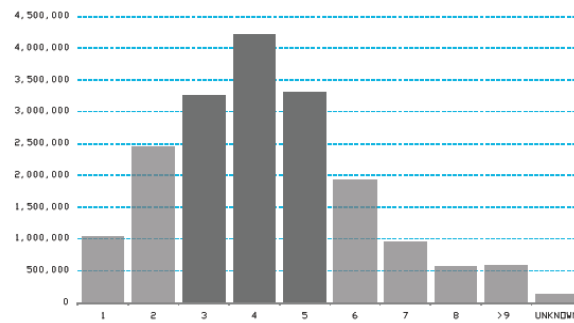
Local government policy towards irregular settlement formation has been generally encouraging this situation, with some notable exceptions of mass evictions. Once established, a lost city will normally encounter few problems in obtaining electricity, although basic infrastructure may take longer, depending upon the terrain, and the location of the settlement, the political climate, and other localized factors. But with this measure, the government is typically stirring the growth of sprawl to the peripheries and beyond. The costs are covered by the inhabitants and the local governments, with federal subsidies for certain items in the case of some specific upgrading programs. Since 2001, the federal district government has run programs providing credits for home improvements and new extensions to owner occupiers in the more impoverished lost cities. This is part of a social investment policy, including money subsidies for the elderly and the disabled, school breakfasts and community crime-prevention measures, which are necessary to improve the living conditions of impoverished people. But at the same time, they tend to increase the creation of illegal settlements.

About 40% of the construction that takes place in Mexico City is self-built. In other words, in this type of “architecture”, neither engineers nor architects required, and about 60% of this self-built construction is housing, so the majority of the people that live below poverty lines build their own housing units. The culture of self-construction is intrinsic to the Mexican culture; it gives residents the control to build, renew, and adapt their environments to their needs and satisfaction³¹. It is also a clear

³¹ Habraken, NJ. "The Structure of the Ordinary: Form and Control in the Built Environment

reflection of the image of the city - a city which is under a process of construction
because it is constantly reinventing itself.³²

METROPOLITAN AREA: 18,404,174
OF HOUSE PER NUMBER OF ROOMS



OF HOUSE PER NUMBER OF PEOPLE

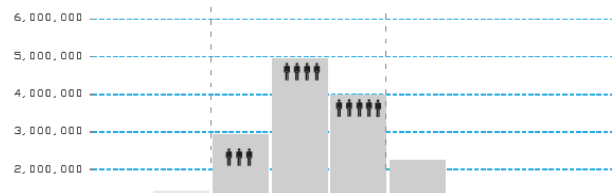


Figure 14 Analysis of the number of rooms and number of people per household. [Image Provided by the author with information from the INEGI]

³²Legorreta, Jorge. "La ciudad de Mexico s Debate." 339. Mexico City: EON, 2008.

Chapter 3: Site Selection

Land Use: Zones for Low Income Housing

In order to improve the air quality of Mexico, several environmental reforms from 1970 to 2000 displaced factories to other cities and vicinities, leaving behind many factory buildings to be turned into warehouses or left unutilized. Some of these areas are close to downtown. Land use has been gradually transformed in some of these areas, thus giving developers the opportunity to buy inexpensive land and transform land use into housing.³³

Even though the majority of the industry was moved to other states, the “clean industry” that followed environmental policies was allowed to remain. With the displacement of the industry, pockets of land within the central area of the Federal district provide possibilities for urban reuse and the development for new land use. These areas in the central bank currently have the necessary urban services as well as the necessary infrastructure to support housing. Furthermore, they are located in the center, a fact that provides the opportunity to generate a mixed income housing model within the area. Finally, they provide a proximity to all the amenities in the historic city³⁴.

The overall site selection process took into consideration areas that not only are low priced but also present proximity to transportation and services.

The first diagram presents areas that can be used for affordable housing because of their low price (fig. 11). However, not all of these zones would be able to

³³ Lopez, Enrique Espinosa. "Ciudad de Mexico. Compendio Cronologico de su Desarrollo Urbano 1521-2000." 325. Mexico City: Instituto Politecnico Nacional, 2003.

³⁴



process of urban pacification and improvement of land use. Since many of these industrial areas are becoming unutilized, the urban redevelopment proposes mixed residential areas.

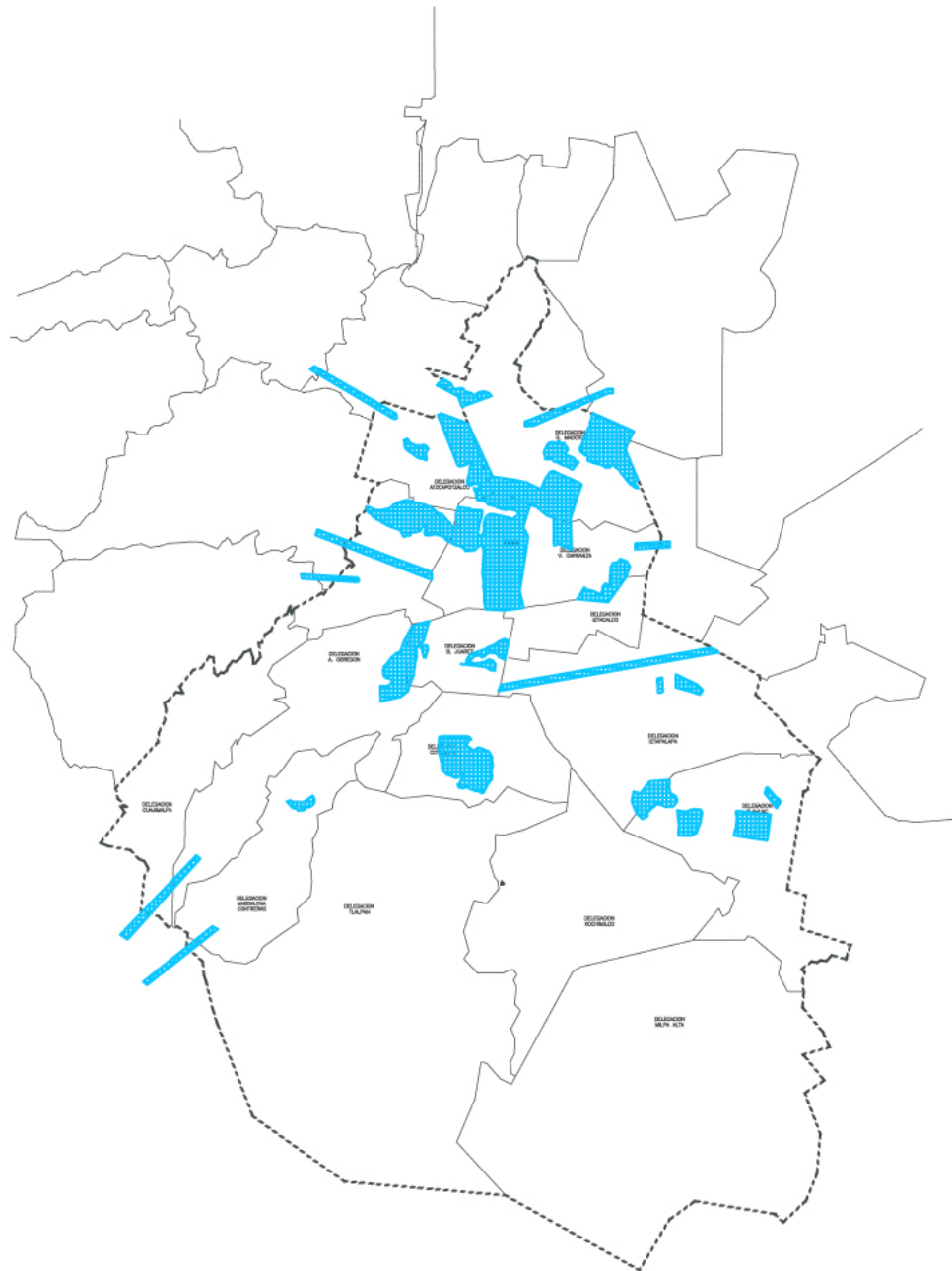
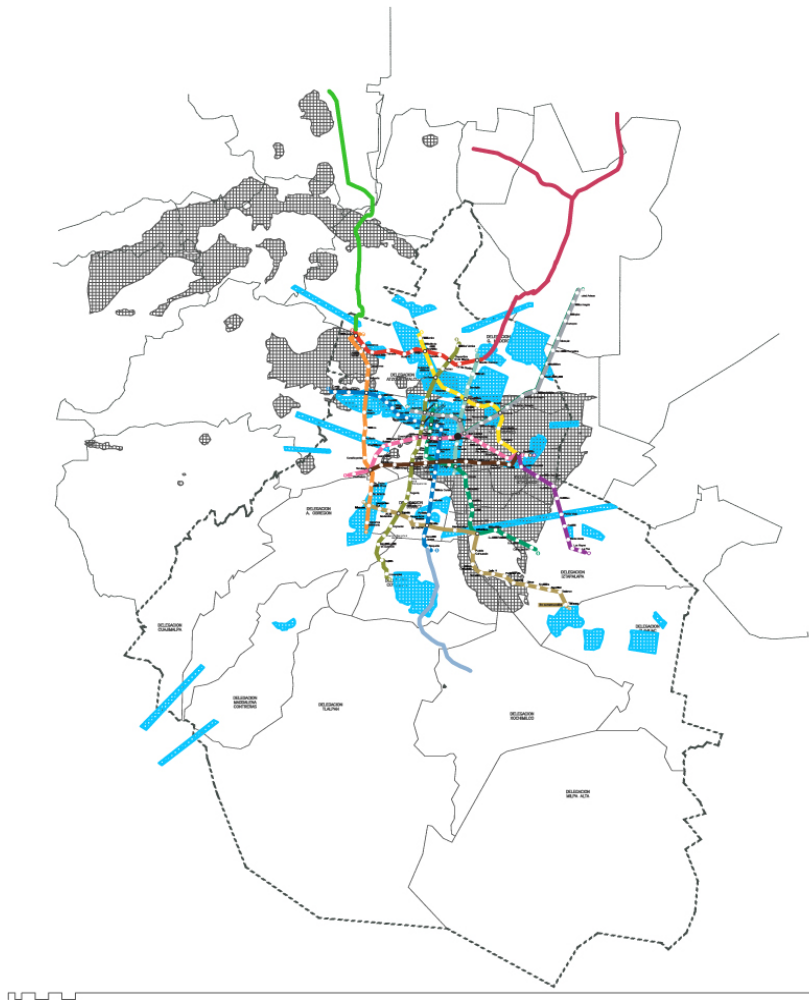


Figure 16 Residential Subsidized Areas. Boroughs offering affordable land value [Image Provided by the author with information from the INEGI]

Since the intention of the thesis proposal is to provide housing within the central areas of the city and located in proximity to accessible areas to public transportation, three possible neighborhoods in central boroughs were selected from this site selection process.



31

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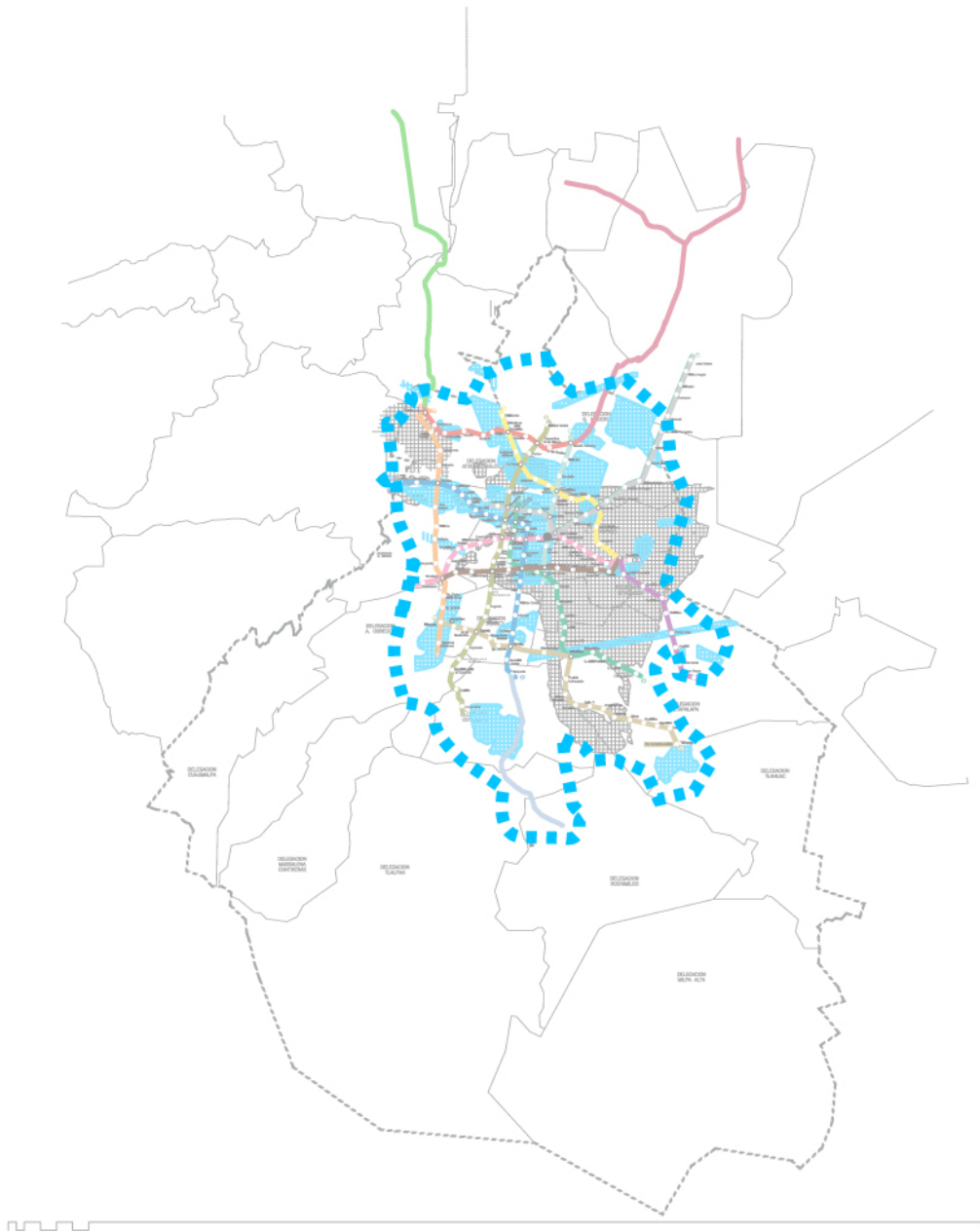


Figure 18 Selection of Areas within the Boundaries of the City. [Image provided by the author with information from the INEGI]

Site1: Historic Neighborhood

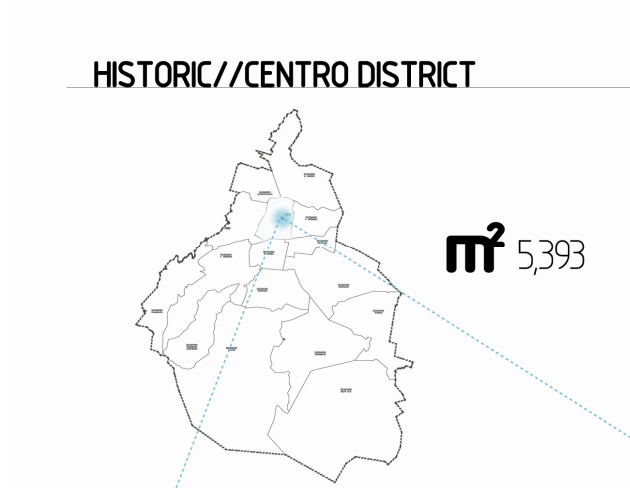


Figure 19 Location of Historic site in relation to the city [Image provided by the author]

Centro Historico (Historic Center) located in the borough of Cuauhtémoc.

The type of project in this area would be a smaller scale intervention and an infill solution. The site provides a proximity to a variety of services and amenities that are culturally enriching. The site is currently being used as a parking lot. It was sold to a social housing agency, which will begin the construction of apartments in 2010.

The lot is in a transition zone between the historical centre in which Aztec ruins and colonial architecture of the 17th century meet with the commercial architecture of the 20th century. The site lies in front of several historic buildings, namely the 17th Century Baroque Church of *Santa Catarina* and the Baroque hotel *Virreyes*, along with many courtyard *palazzo* type buildings. Although there are several concrete modern buildings in this historical neighborhood, the architectonic intervention would require considerations in style and scale. In order to generate a harmonious dialogue with the historic character of the site. The urban fabric in the downtown area

represents the urbanism of the colonial and baroque periods. The project for this site would not require any type of community or urban services in its program since most spaces of interest occur in the streets. Due to the size project of the site, it would have to focus mainly on providing housing units. Finally, the principle of self-built might not work in this specific area, or if it were to take place, it would have to be more discrete since the street already has a character. The prototype for social housing in the district area could only be developed as an infill model and would have little success in its propagation, since there are very few vacant sites in the area and tearing down historic buildings would be unrealistic.

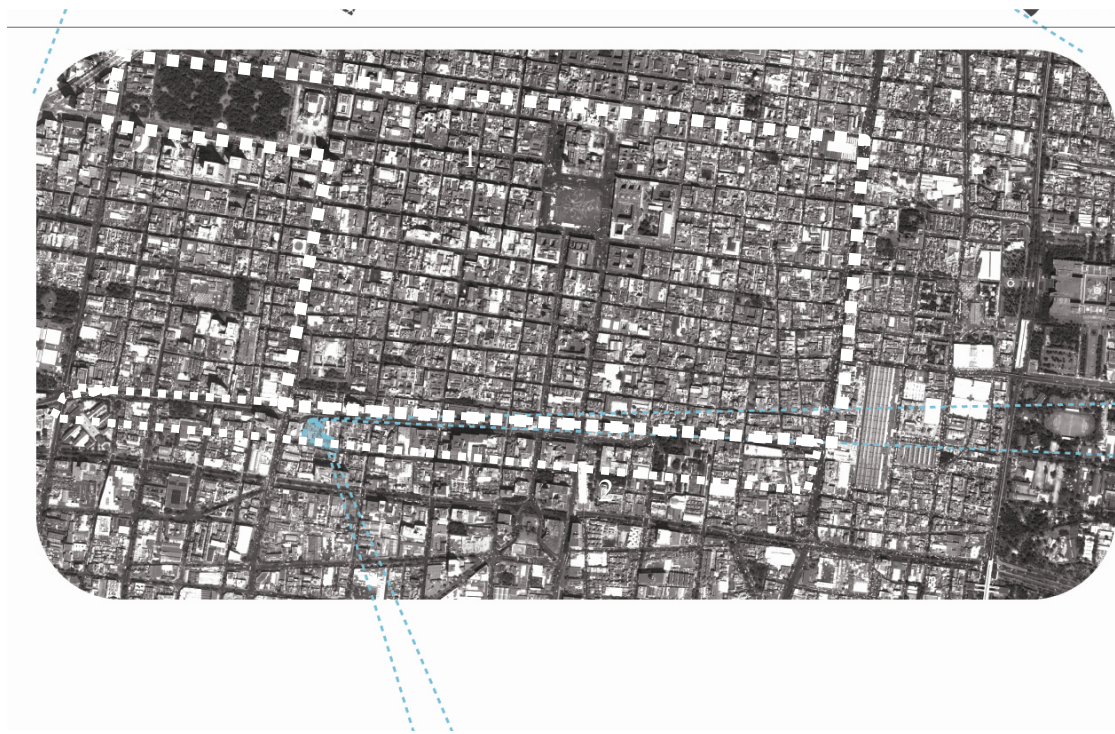


Figure 20. Aerial map of the site, showing grid layout and regular block sizes. 1 Represents the boundaries of the historic downtown, 2 represents the commercial area [Image provided by google maps]

The site is located between two main commercial arteries which may cause the area to have sound and garbage pollution, and traffic issues. On the other hand, it is an

This is a detailed architectural site plan of the San Antonio neighborhood in Mexico City. The map shows a dense grid of urban blocks with numerous buildings represented by black outlines. Key streets include Avenida de la Independencia running vertically through the center, and several horizontal streets such as Calle de la Cruz, Calle de la Virgen, and Calle de la Santa Cruz. A large, irregularly shaped area in the upper right portion of the map is shaded in dark grey/black, indicating a specific zone of interest or development. Various labels are scattered throughout the map, identifying specific locations like 'San Antonio', 'Calle de la Cruz', 'Calle de la Virgen', and 'Calle de la Santa Cruz'. The overall layout suggests a well-organized urban environment with clear street patterns and distinct building footprints.



Figure 23 Picture of Site. Parking lot and to adjacent traffic arteries[Image provided by the author]

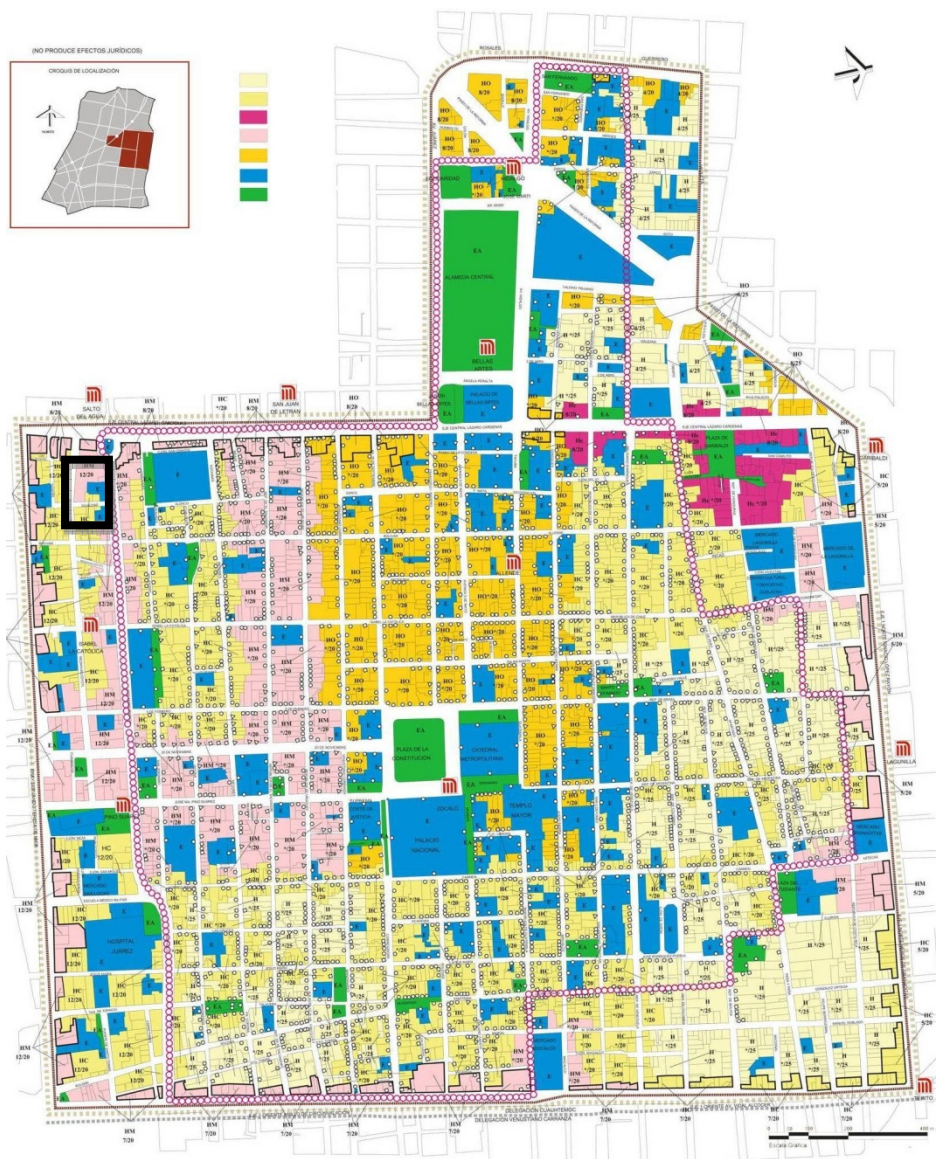


Figure 24 Land use of the site. The current land use for the site is residential mixed although it is currently used as a parking lot. [www.seduvi.df.gob.mx]

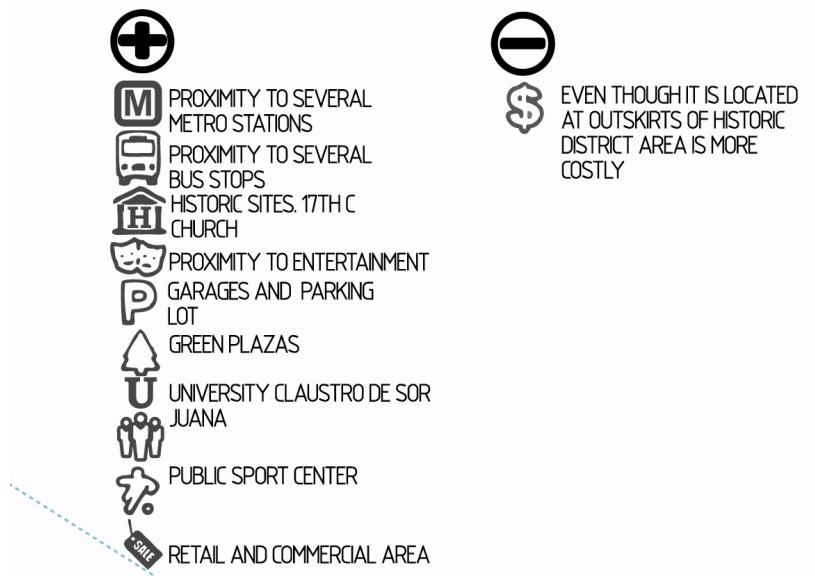
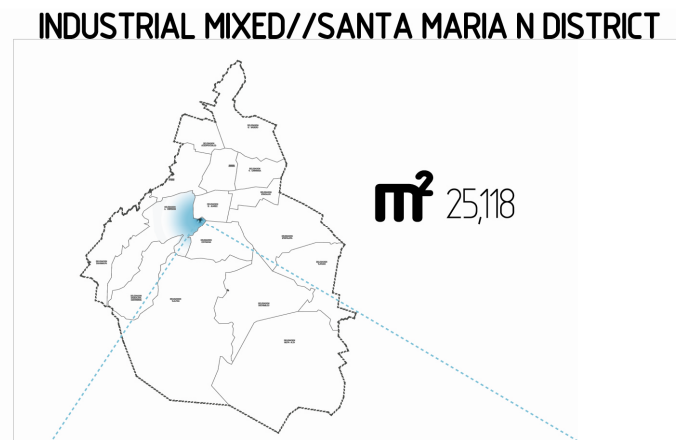


Figure 25. List of Attributes.Favorable versus critical attributes. [Image provided by the author]

Site2: Santa Maria Nonoalco.



This site is located in the borough of Gustavo Madero. It is a complex site because urbanistically, it is the transition zone for three areas: to the south and north there are social housing complexes of high density; to the east it there is a highway that divides are a series of neighborhoods for middle and upper middle class, and to the west it borders an impoverished area of squatters. This site also presents some pockets of industry, among them a milk factory and a cement warehouse. Some of the

current industry has been gradually replaced by high density housing. The plot for the site was utilized for storing and providing maintenance for public buses, which were replaced by a new metro-bus system that requires fewer buses, and the Bureau of Urban Planning of Mexico City had cataloged it as industrial land. However, with changes in policies, several construction companies are currently participating in a bidding process to develop high density housing and commercial construction in such land.

The site is in proximity to a major highway that encircles the city, the *periferico*, which makes this location accessible and well articulated. Most of the areas that are adjacent to the site are either industrial or walled housing complexes, which allow little opportunity to generate a community in the neighborhood. The community aspect within a housing project like this would have to occur inwardly and because of the quality of space in the area, the project would have to provide many public and community services that the area lacks. There would also be a concern in terms of providing security to the housing units since the area seems isolated by adjacent industries, and the neighborhoods to the west are considered to be high crime areas. The site provides an appropriate size to provide public and recreational spaces, as well as a variety of housing units. However, the unconventional geometry of the site

An aerial photograph of a city grid, likely New York City, showing a dense pattern of streets and buildings. A dashed white line outlines a large, irregular area in the center-left. A solid blue line outlines a smaller, irregular area in the center-right. The image is framed by a white border with rounded corners.

Figure 27. Site Plan. [Image provided by the author]



Figure 28 Images of Site. Photographs taken from periferico highway in the background, illustration of hill with squatter settlements. A high density social housing project and industrial warehouses. [Image provided by the author]

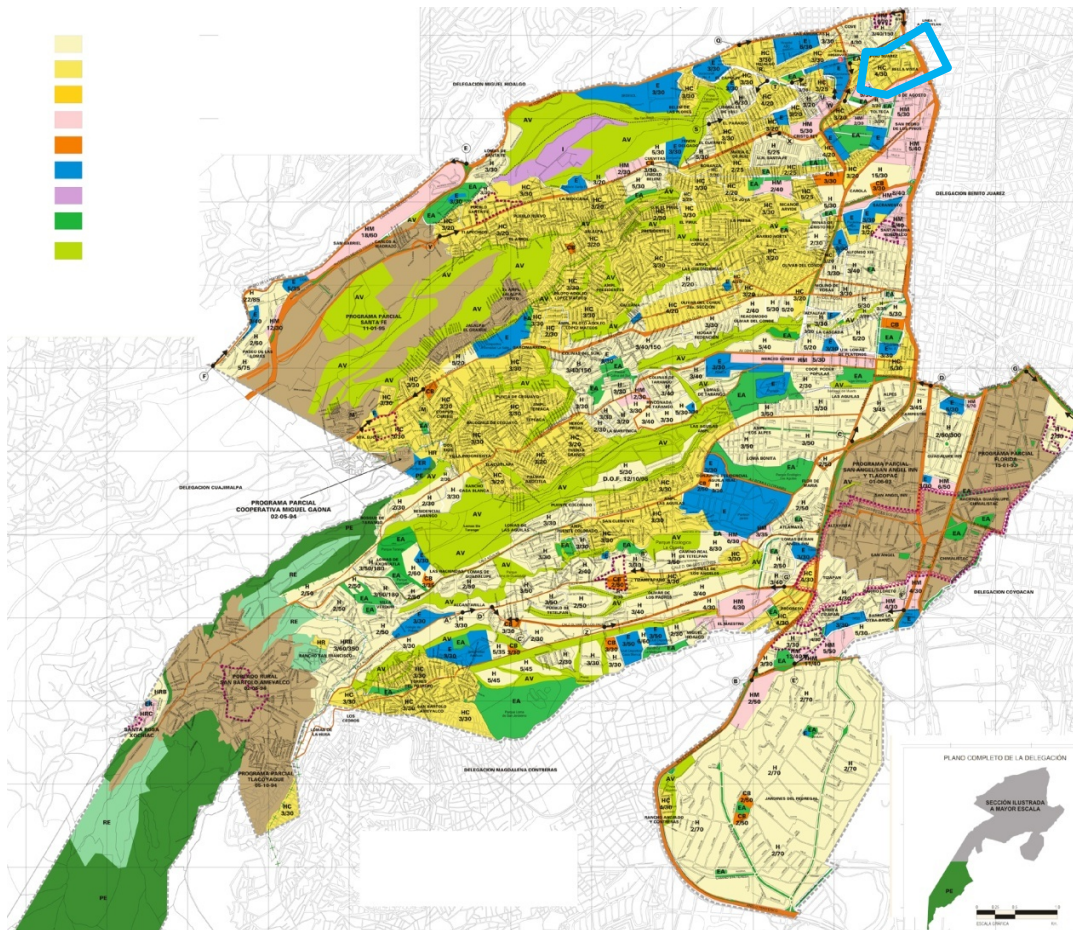


Figure 29. Land use of Alvaro Obregon Borough. The borough presents major green areas that have been gradually converted to squatter zones. The site location is highlighted in blue, indicating a land use for urban equipment. The site in front to the north was formerly designated with an industrial land use but it is now functioning under residential use.
[www.seduvi.df.gob.mx]

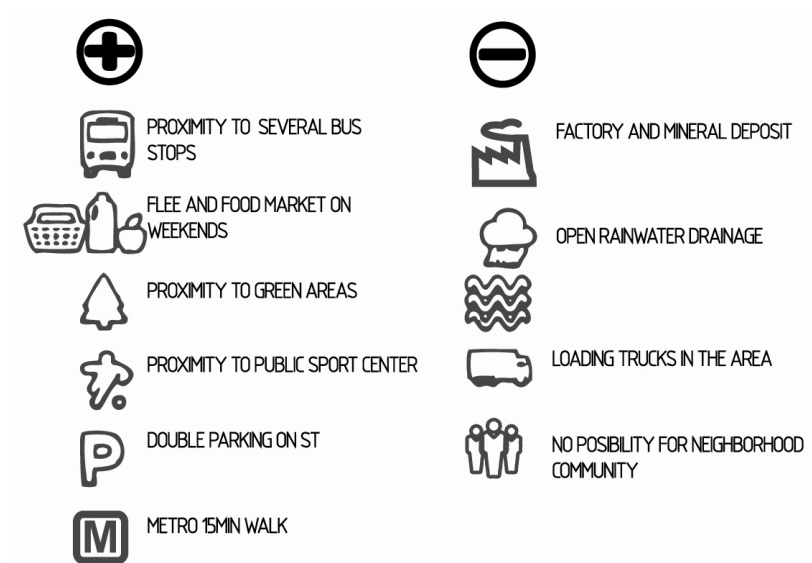


Figure 30 List of favorable versus critical attributes. [Image provided by the author]



Figure 31. Image of High Density Affordable. Housing units built in front of the Santa Maria site. [Image provided by the author]

Site3:Industrial Atlampa District.

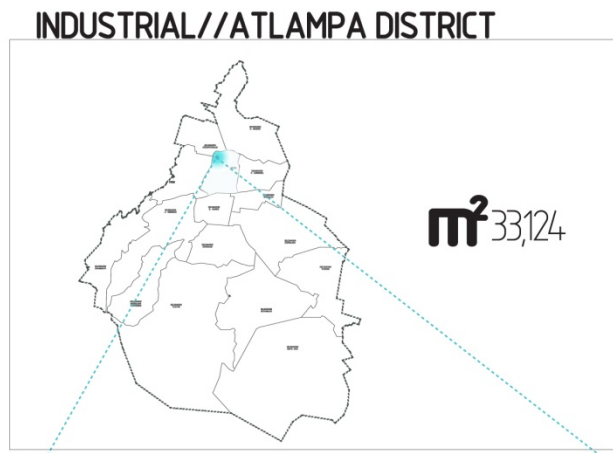


Figure 32 Location of Atlampa Neighborhood. [Image provided by the author]

Atlampa also located in the borough of Cuauhtémoc. This site was historically one of the first industrial areas in the city, which began to develop during the 19th century with the sudden boom of the Industrial Revolution. Atlampa was developed as an industrial area because of its adjacency to train lines, a fact that was an advantageous location for the storage space of export goods and products from the industries. Drain and water constructions in this area were finalized in 1900 in order to develop this industries. Many working class neighborhoods began to grow as a consequence of this fructuous industry. During the 1940s and the 1950s OR from the 1940s to the 1950s, there was a subdivision and regulation policy of industrial zones which established Atlampa as a zone for general industry, thus forbidding the production of hazardous gases or liquids, disturbing odors or sounds. By 1970, many of these industrial zones were utilized as warehouses, and there was a significant decrease in the number of workers employed in the industries and warehouses. Nowadays, several industries are being sold and subleased, since these factories no longer have a strong economic production. Developers have taken advantage of the change in land use policies and have demolished several factories in the area, a fact that has started a process of transformation from industrial to mixed residential. High density affordable housing projects have been replacing these factories.

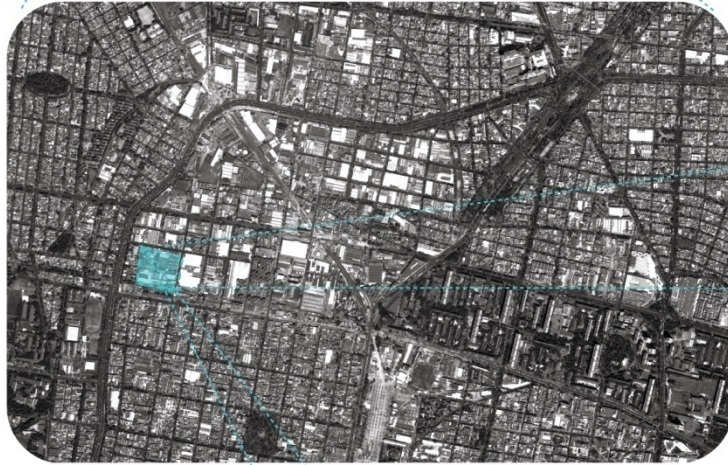


Figure 33 Aerial view of Atlampa. Site to the north covering more industrial complexes, to the east a massive social housing project, Tlatelolco, and to the south and west middle class mixed residential zones. [Image provided by the author]



Figure 34 Site plan of the area. [Image provided by the author]



Figure 35 List of attributes. Favorable versus critical attributes. [Image provided by the author]



Figure 36 Abandoned warehouse in Atlampa in the back an affordable housing project. [Image provided by the author]

Comparison of Sites.

The matrix presents a comparison among the three possible sites in terms of proximity to services and amenities, size, density, and state of the physical conditions of the environment. The intention of the thesis proposal is to design a prototype of housing that can be propagated to different lots throughout the neighborhood. The neighborhood of Atlampa is better equipped in terms of infrastructure that can sustain a housing project. Although the basic elements to sustain a community are still non-existent because of Atlampa's former industrial use, spaces can be designed to offer dwellers communal activities.

SANTA MARIA

Proximity to	+	-	0
Metro			
Bus			
Food Market			
Hospital			
Public school			
Commercial Area			
Residential			
Park			
Sport center			
Religious center			
Size			
Area			
Scale			
Density			
Height			
Units			
Health			
Sanitation			
Pollution			
Noise			
Security			
Future			
Spread prototype to surrounding areas			
Apply self construct technique			
Community			

ATLAMPA

Proximity to	+	-	0
Metro			
Bus			
Food Market			
Hospital			
Public school			
Commercial Area			
Residential			
Park			
Sport center			
Religious center			
Size			
Area			
Scale			
Density			
Height			
Units			
Health			
Sanitation			
Pollution			
Noise			
Security			
Future			
Spread prototype to surrounding areas			
Apply self construct technique			
Community			

CENTRO

Proximity to	+	-	0
Metro			
Bus			
Food Market			
Hospital			
Public school			
Commercial Area			
Residential			
Park			
Sport center			
Religious center			
Size			
Area			
Scale			
Density			
Height			
Units			
Health			
Sanitation			
Pollution			
Noise			
Security			
Future			
Spread prototype to surrounding areas			
Apply self construct technique			
Community			

Chapter 4: Analysis of Atlampa.

The site of Atlampa was selected because of the services and amenities it offers. As such, it can support a housing project. But, above all, Atlampa presents the opportunity for designing a prototype that can be applied to the other plots or blocks in the site.



Figure 37. Large view of site with 10 minute walk radio. [Image provided by the author]



Figure 38 Industrial land use [Image provided by the author]

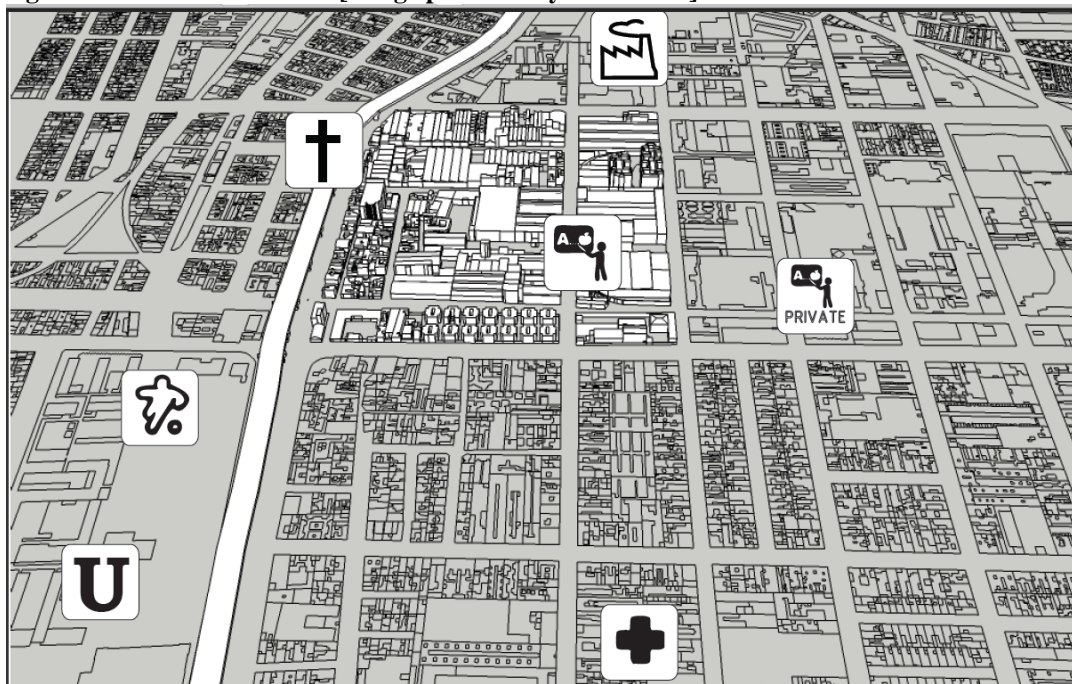


Figure 39 Diagram of Use. Some of the services and amenities provided in the area. Public university IPN, Public hospital IPN. Public elementary school. [Image provided by the author]

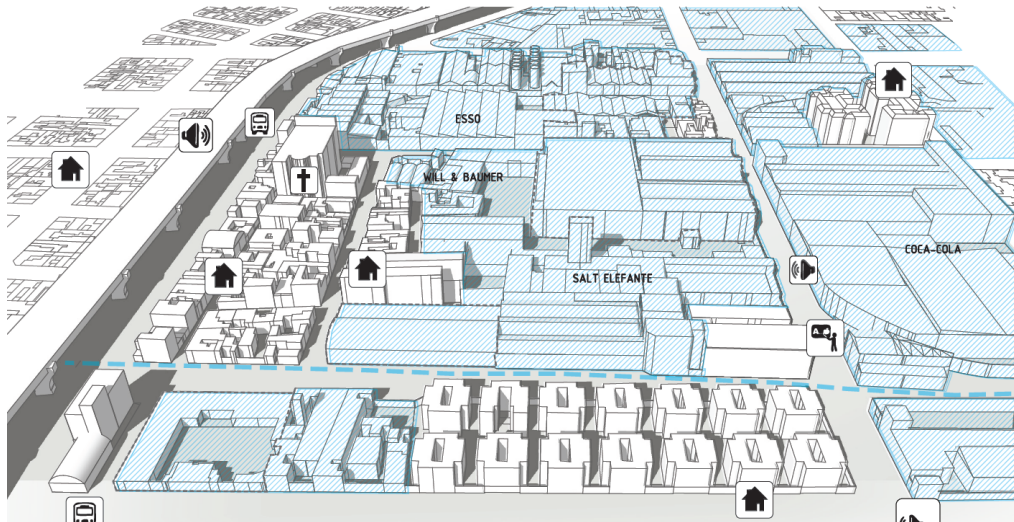


Figure 40 Site Axon Diagram with Icons. The block to be analyzed is comprised by a series of packaging and distribution companies. In the block Elefante salt and Will and Baumer factories are still in use. Adjacent to the block are Coco-Cola and oil Esso companies. [Image provided by the author]

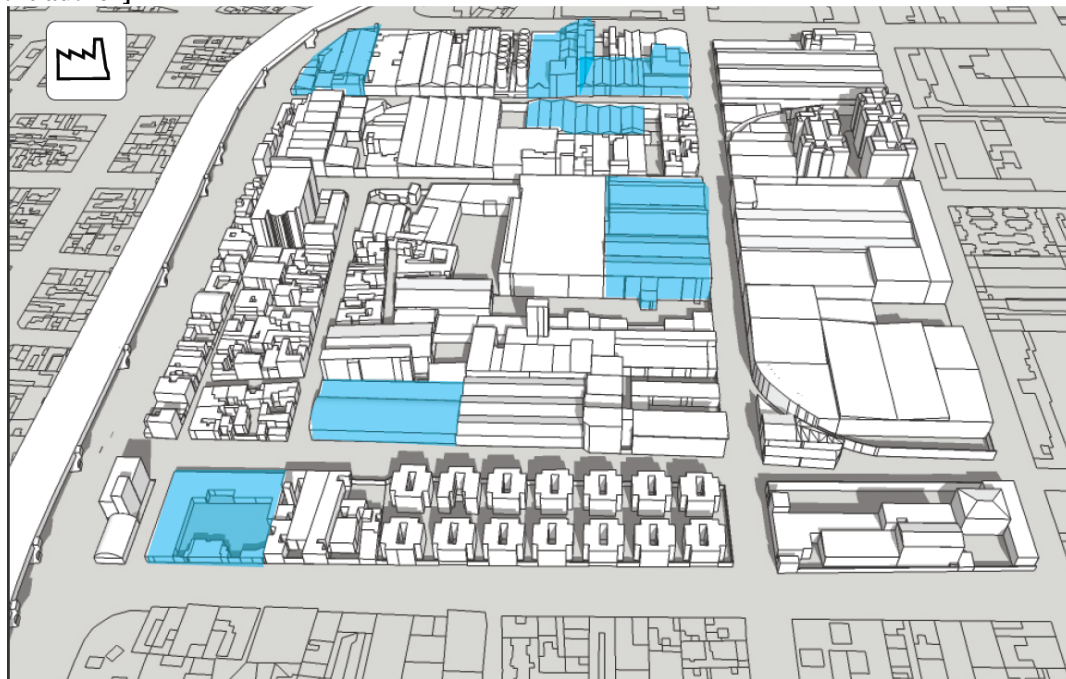


Figure 41 Warehouses and Factories on Sale. [Image provided by the author]

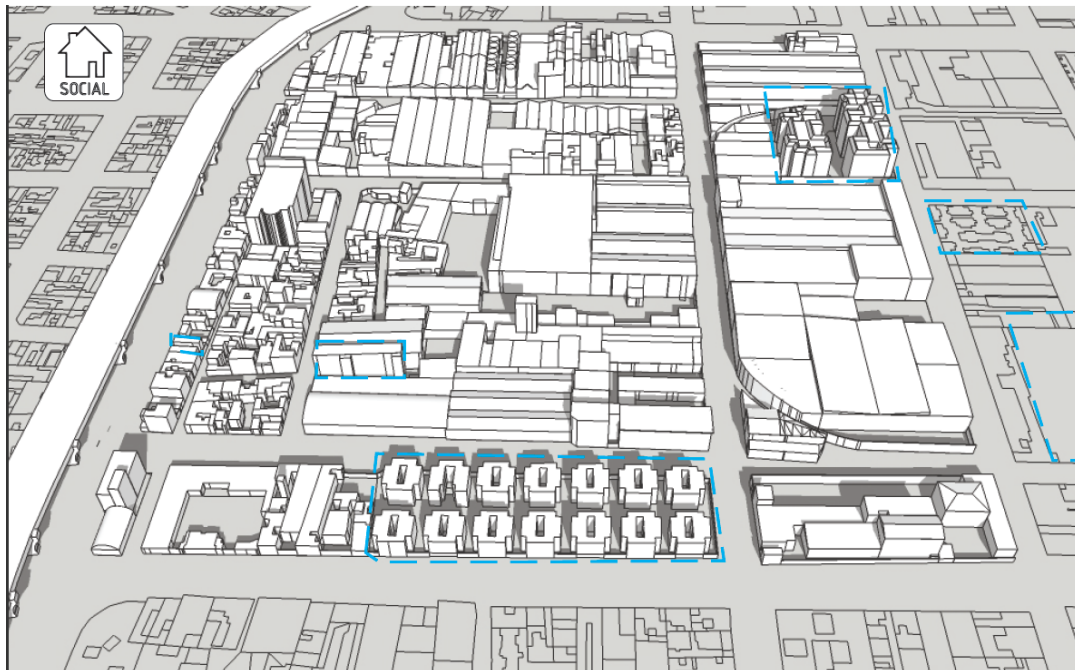


Figure 42 Social Housing Diagrams. Public housing units subsidized by the government. [Image provided by the author]

Although the neighborhood of Atlampa was originally destined as an industrial area several pockets of residential buildings and civic buildings are included in the site.

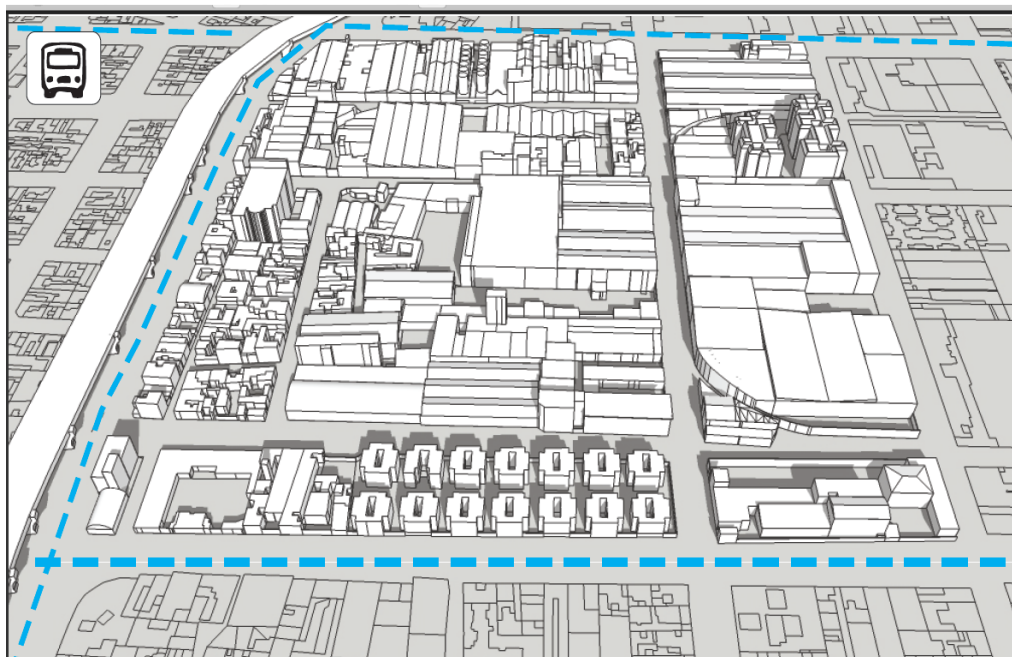


Figure 43. Bus Routes Diagrams. Access to public transportation is essential to the development of a neighborhood. Lost cities offer little articulation to transportation systems, on the contrast the centre of the city offers the possibility of transportation access and proximity to employment. [Image provided by the author]



Figure 44 Land use of the Area for Study. Yellow: Mixed residential. Gray: Industrial. Light Purple: educational facilities and Purple: institutional and civic. Pink: amenities. [Image provided by the author]



Figure 45 Street network and street hierarchy in the area. [Image provided by the author]

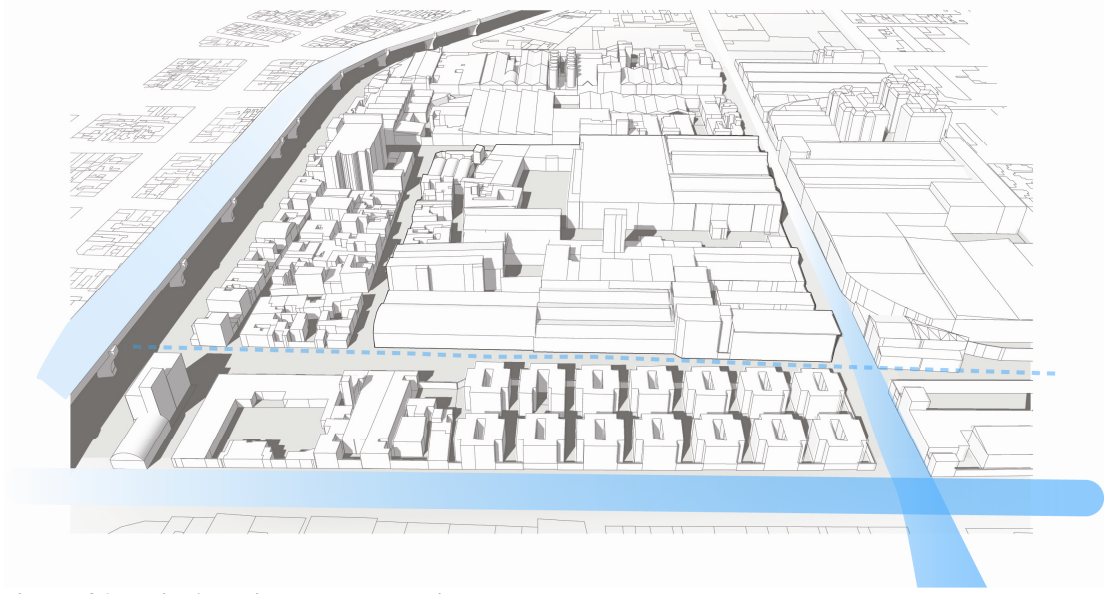


Figure 46. Main Arteries. [Image provided by the author]

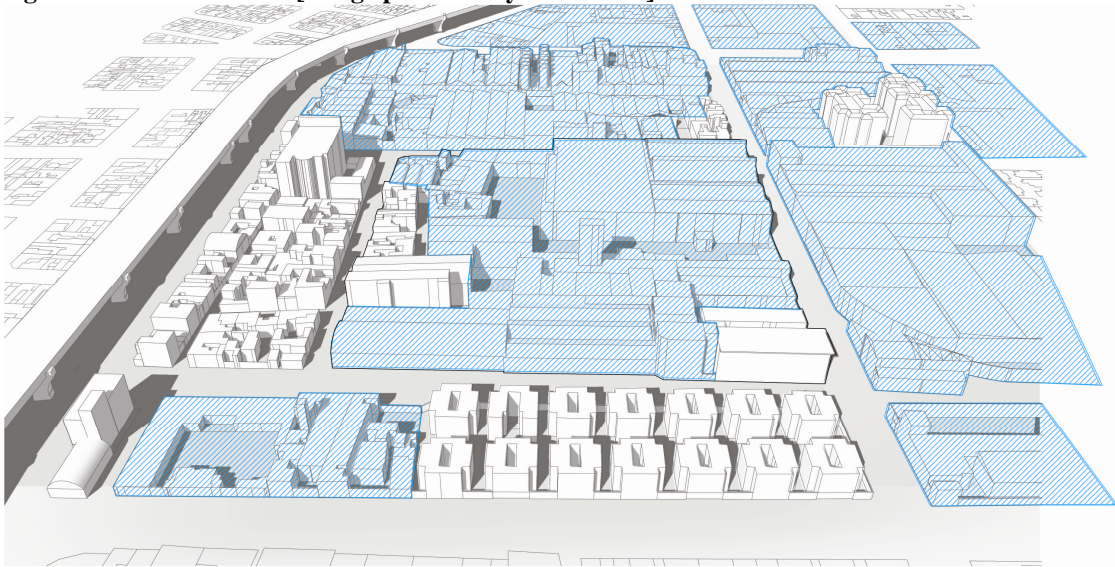


Figure 47. Factories [Image provided by the author]

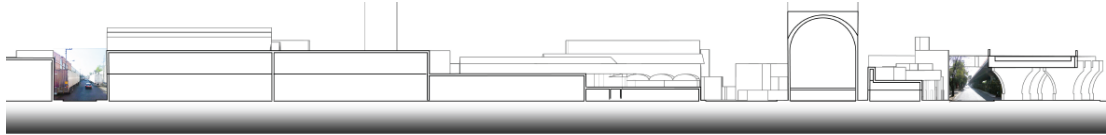


Figure 48 East- West section Representing Heights. The street to the west has an elevated highway. The space of the church contrast with the factory. [Image provided by the author]



Figure 49. Warehouse for Sale in Cedro Street. [Image provided by the author]



Figure 50. Atlampa Neighborhood. Currently isolated industrial area, street graffiti demonstrate vandalism as well as lack of control and “territoriality”. [Image provided by the author]

Chapter 5: Atlampa history

Atlampa is the generic site name given by the Aztecs. It means “ behind the water” in Nahuatl. This site was named Atlampa since it was a waterfront land of the Aztec territory. Atlampa belonged to the territory of Tlatelolco and Nonoalco; these territories were established on islets by the Aztecs in the 10th century, near the Aztec capital of Tenochtitlan. Tlatelolco and Tenochtitlan were linked by land, by means of floating gardens, where vegetables and plants were grown. In the beginning, Tlatelolco and Nonoalco were separate but interdependent entities in relation to Tenochtitlan. From the 14th century to the last quarter of the 15th century, it was

occupied by Atzacapotzalco vassals, a group from a northern territory. And in 1473, it was conquered by the Aztecs of Tenochtitlan, that is, Tlatelolco became one of the lordships that had to pay tribute to the Aztecs although they still kept a certain degree of political independence.³⁵

During the Spanish conquest, Tlatelolco turned into a Spanish Colony, and Atlampa became the zone of Santiago Tlatelolco, the territory was passed on to hands of the first Franciscan orders of Mexico.

The concept that indigenous people had of property was different from that held by the Spanish. The Spanish colonizers saw land property as a means to acquire wealth and power while the natives saw land as a means to satisfy elementary necessities and materials. On the one hand, the Spanish colonizers brought the Roman concept of individual property. On the other hand, the indigenous saw property as a communal property and private usufruct in which land was inherited by members of the groups and their descendants.

In general, the land was taken from the natives by Spanish colonizers through trades and evictions. However, the land of Tlatelolco was protected by the Franciscan order and, at the beginning, there were no changes on the land property titles.

By the 18th century, the indigenous partiality of Tlatelolco had accumulated economic power due to a careful management of its main possession, the *Hacienda of Ana de Aragon*, a vast possession of lands that occupied all the territory in the north limits of Mexico City.

³⁵ Romero, H. *Enciclopedia Tematica de la Delegacion Cuauhtemoc*.

The territory of Tlateloco, where Atlampa was located, had an exceptional community of indigenous groups successfully involved in an agricultural and farming enterprise, which was an activity mainly done by Spaniards and creoles at that time. The communities of Tlatelolco accumulated a surplus in wealth by the end of the 18th century the community was able to lend money to private groups or to the City council and municipality. Other parts of their capital were trusted to the Bank of *San Carlos*. By 1800, the Spanish Crown began a development of policies, triggering a slow process in which common wealth was gradually divided initially by capital and then by properties and wealth.³⁶

By the 19th century, Tlatelolco had lost its material base and wealth possessions, a fact that reduced practically the size of lots, which were gradually transformed into neighborhoods. And in the Constitution prepared in 1812, the Indian properties were absolved.

During the 19th century, the former Indian towns formed irregular shanty towns that rose among agricultural cops. Their spatial distribution contrasted with the order of the streets and well defined urbanism of the historic center. Tlatelolco began to be modified as the Spanish city grew. Through this territory, the urban order of the historic center was imitated with the regular grid subdivision and the dense urban fabric. Streets were laid out, commerce and low income houses and hostels were built to house dealers and traders that came from out of the city. Rodeos were built along this area as well.

In 1856, an engineer, Jose Maria Marroqui, presented the Ministry of Urban Development a project to “colonize the empty lots that were in the periphery of

³⁶ Romero, H. *Enciclopedia Tematica de la Delegacion Cuauhtemoc*.

Mexico City which included part of Atlampa. Marroqui saw this lands as “sterile and useless and also presents a problem to the police of the city”. He proposed to fraction the lots and convert them into blocks, thus promoting their integration and articulation to the city. However, this was not fully developed since there were some dwellers in the blocks that had divided the properties and organized them on their own, selling them to leaseholders after the dissolution of the Indian towns. These actions had fractioned the common property, given to real proprietors.

The Constitution and Law of 1856 had a small margin of action of the properties of Indian towns allowing them to manage capitals and properties and to legally sell or acquire land. By 1868, the government decreed that it was forbidden to administer the remaining partialities so the empty lots were reduced and sold to private proprietors. The government and City council of the city started administering the capitals and wealth. Such fact allowed the civil power or the state to acquire the wealth of the indigenous people.

In 1871, most of the Northern lots and oriented of the city remained empty and without delimitation, thus making them centers for unhygienic spots and dumpsters. By 1884, the commission of the city municipality launched a movement of city beautification and expansion the city municipality. The main activity was to plant trees and clean some abandoned areas. In 1870, some water wells were constructed for water consumption.

Atlampa became densely populated in 1880, with the layout of the tracks of the Central Train system, which went from Mexico City to Veracruz.

During this period, a new bourgeois class was formed, caused by the ascension of the middle class and an increase of foreign immigration interested in developing the industry of Mexico. The social pyramid of the 20th century suffered a restructuration at the top of the pyramid. Groups of foreigners, namely Germans, British, French, Spanish and North American and aristocrats occupied the directions of industrial and factory enterprises, financial institutions, and commercial establishments. Their investments supported and developed the industry in Mexico. The political powers oriented the economy of Mexico toward the industry by generating laws, decrees, and rules to regulate the country's economic activity.

The growth and modernization of the manufacturing and industrial plants of Mexico City was stimulated mainly in the 1880s, a fact that later benefited from the orientation and construction of train lines that crossed Mexico City. The development of the industry was also fostered by the investment and commercialization coming from important national and foreign banks, which grew to meet the demand of the population demand.

By the end of the 19th century, the diverse industrial enterprises were localized in diverse sites of Mexico City. Their location responded to diverse factors; the most important was to guarantee the energy that each factory required. Some of them were located in proximity to water bodies to utilize them for hydraulic energy and cleansing. Moreover, the urbanization contributed to the establishment of several factories and workshops in proximity to areas where land offers were affordable, and the use of communication networks was possible, guaranteeing cheap labor work craftsmen, and thus better success.

Textile, food, and chemical products such as soap, beer, tobacco, matches, water, candles, artificial stones, construction material, liquor, and candy were the main products manufactured in the zone of Atlampa.



Figure 51. Atlampa in the 1900s. Image from the Historic National Archive

By the end of 1894, the industry grew in importance and new buildings were raised for warehousing and storing. From this period, the buildings for factories were no longer private property. New laws were created to protect these factories and increase the capital. The buildings of the factories were renewed completely to make room for massive production and installment of new machinery. These new industrial centers gradually brought down small workshops and craftsmen. They also caused increased production of an industry oriented to clothing and textiles.

In the end of 1910, there was a social discontentment and economic difficulties, characterizing the last years of *Porfirio Diaz* Dictatorship, which eventually caused the Revolution of Mexico in 1910. Even though the Revolution outlasted 10 years, it did not create great impact on the industrial installations due to their somewhat distant location from the conflict zones. After the Revolution, a new period of social and political reorganization began. This fact did not alter the character of the industry destined to the production of consumption goods and the textile industry, which were still the most important industries at that time.

In 1926, the proprietors formed a cooperative and asked the city municipality to finish settling all the appropriate and modern services. Since then, Atlampa has the all the necessary infrastructure.

After the Mexican revolution in 1930, there was a period of tranquility but at the same time, a period of economic development and demography began, together with the apparition of new architectonic forms and spaces responding to new necessities. There was the creation of suburbs, working neighborhoods, and factories.

In 1985, there was an earthquake, which caused the expropriation of damaged properties, including mainly affected popular or poor neighborhoods. Their reconstruction was allowed, and they also kept the social character and low prices in the surrounding areas of the borough of Cuauhtémoc and areas such as Atlampa. During this period, the city experienced deindustrialization and lost its main demographic character. However, what was reinforced was the sector of informal activities, mainly street vendors, which surpasses half of the economically active population. It was also during this period that the recuperation and preservation of

historic sites became important for the recuperation of historic, archeological, and ecological centers.

During this period it was evident the deindustrialization of the city and lost its main reason of being. However what was reinforced was the sector of informal activities, mainly street vendors, which surpasses half of the population economically active. It was also from this period where the recuperation and preservation of historic sites became important for the recuperation of historic centers as well as archeological and ecological. In this fragmentation of social crisis began a syndrome of insecurity and reflected in the creation of closed residential streets and apartment complexes.

Today Atlampa is limited to the west by the interior circuit, to the north by Pino and San Simon to the west by North Insurgentes and to the south by Flores Magon Avenue.

Its current limits are blurred with Santa Maria insurgents also an industrial neighborhood and Santa Maria la Ribera a former middle class neighborhood. The south is bordered by the original train tracks.



Figure 52. Textile Factory. La Maravilla textile factory, now a paper warehouse [Image provided by the author]



Figure 53 Textile Factory. la Maravilla, now paper warehouse [Image provided by the author]



Figure 54. Original Wood Truss [Image provided by the author]



Figure 55 Carbon Paper Factory, now a building the secretary of hacienda (tax department), used for storing “dead files” [Image provided by the author]



Figure 56. Warehouse[Image provided by the author]



Figure 57. Warehouse [Image provided by the author]



Figure 58 19th Century House. Located in the limits between the neighborhood of Sta Maria la Ribera[Image provided by the author]



Figure 59House in Atlampa. Located in the limits with Eulalia Guzman.

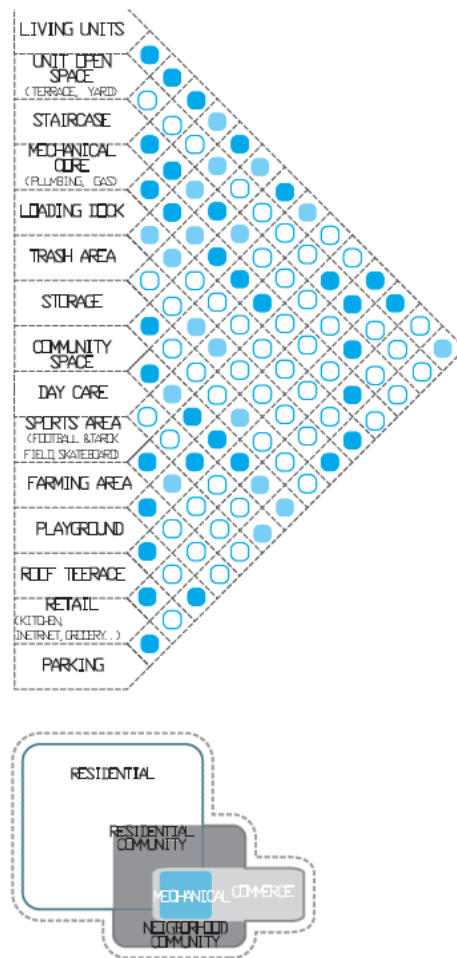
Crime in Atlampa, most of the factories and warehouses in Atlampa are underutilized, creating pockets of desolated streets and spaces within the city. The Crime rates in Atlampa are high since there is not enough public interest on the area. The neighborhood seems to have a lack of territoriality and the introduction of social housing projects in the neighborhood hasn't provided enough articulation between the residential and industrial blocks. The housing units in the area are isolated and somehow deny the public realm, creating an insecure environment. Commerce public spaces in the street level could help mitigate crime as well as to provide a propriety interest in the streets.³⁷ Communal and open spaces could also allow the opportunity for social interaction among residents and factory workers, community would also help to mitigate crime.

Chapter 6: Program

The program presents a variety of individual and community activities. The main goal of the building is to provide individual units with drainage, water, and electricity access. So, programmatically, the units have to connect to the infrastructure cores. The intention of the project is to foster community, so the first floors could be designated for commercial and community activities. The development of the unit complex could be developed in an empty lot, by clearing factories in disuse or finally by revitalizing and using a historic factory building and proposing the units inside its walls. The code of INAH, National Institute of Anthropology, in charge of preservation of historical buildings, stipulates that coded

³⁷ Newman, Oscar. The defensible space/

buildings can change their original use. However, the main structure as well as the façade has to be preserved.



Possible program for the development of 42 units in metric units

	SCHEME1
TOTAL AREA	7939
	85451
	1.96
UNITS	42
	84
UNITS/ACRE	21
	43
COMMERCIAL/SERVICES	600
SHOPS/SERVICES	400
FARMACY/CLINIC	200
COMMUNITY	1420
DAYCARE	600
LIBRARY	
ELEMENTARY SCHOOL	
COMMUNITY BUILDING	420
OPEN SPACES	2000
PLAYGROUND	800
FOOTBALL FIELD	
COMMUNITY GARDENING	1200
PERMEABLE PARKING	600
PLAZA	
UNITS	1680
TOTAL	6300

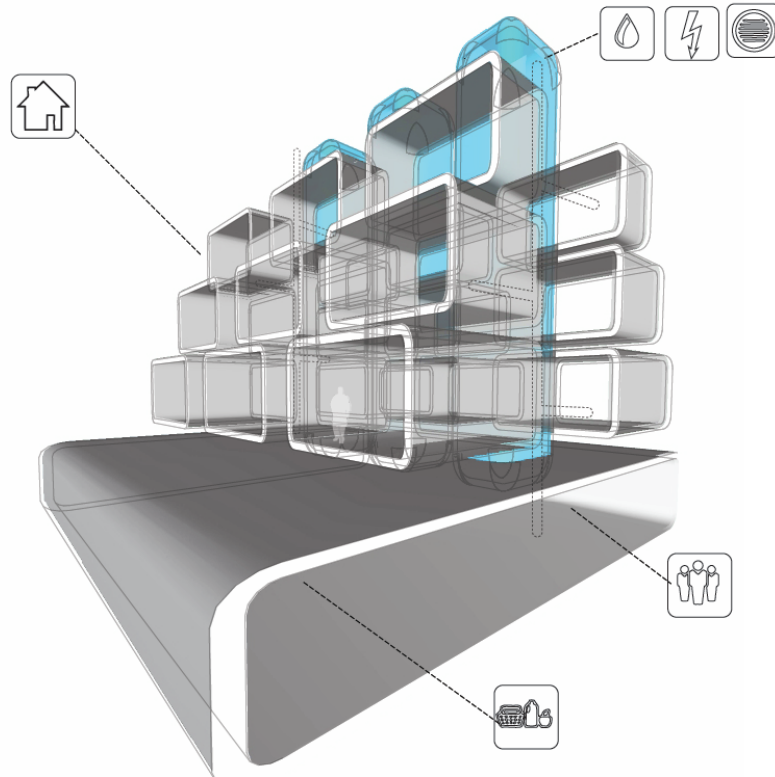


Figure 60 Diagram program for distribution of units. [Image provided by the author]

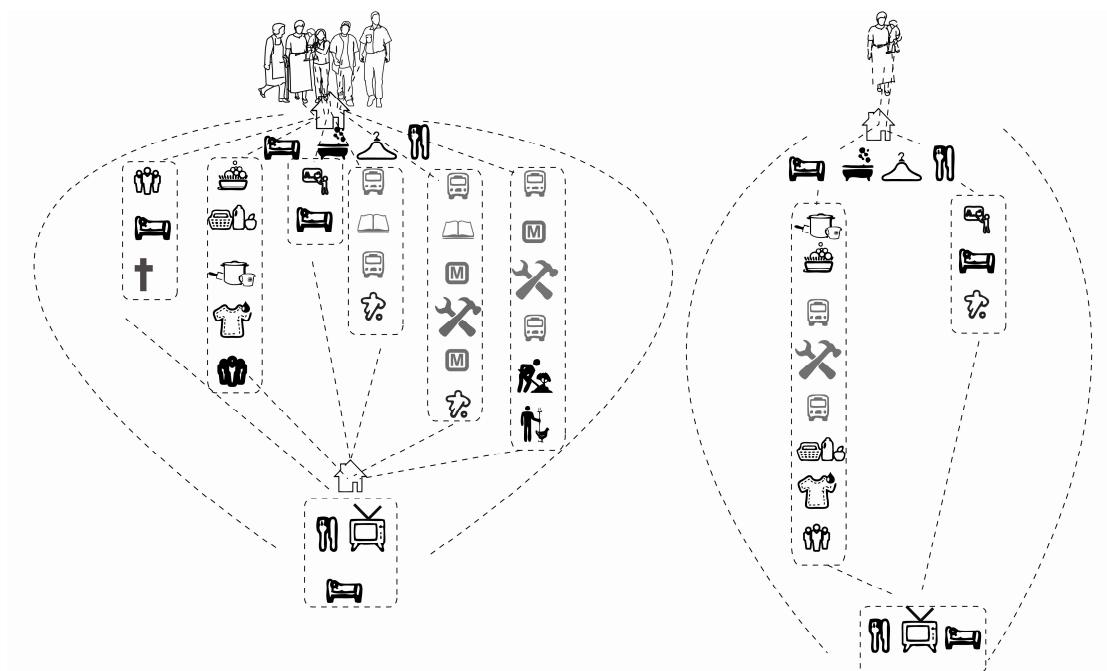


Figure 61 the program of the units should flexible in design to support different types and sizes of household activities. [Image provided by the author]

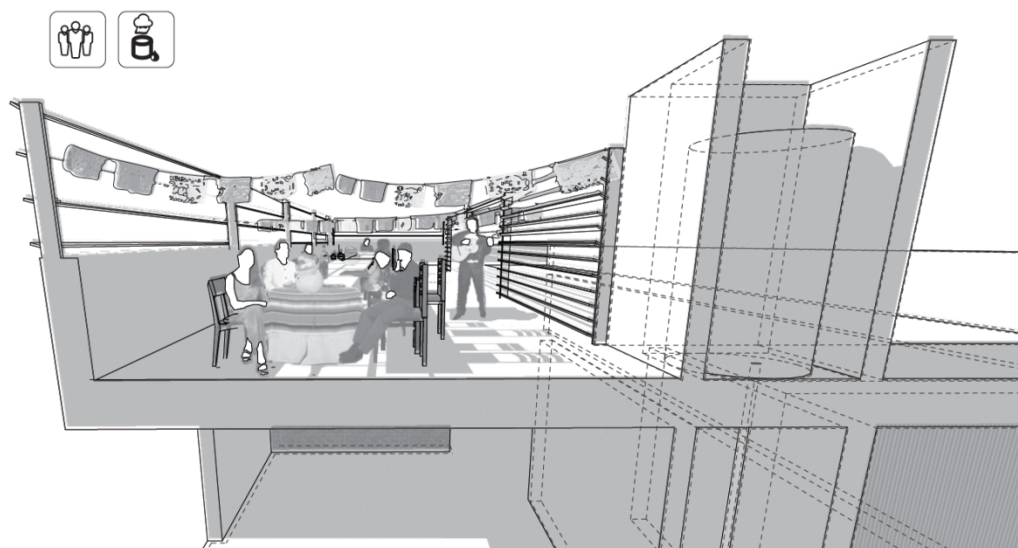


Figure 62 Perspective. Drawing showing community engagement in roof terrace. [Image provided by the author]

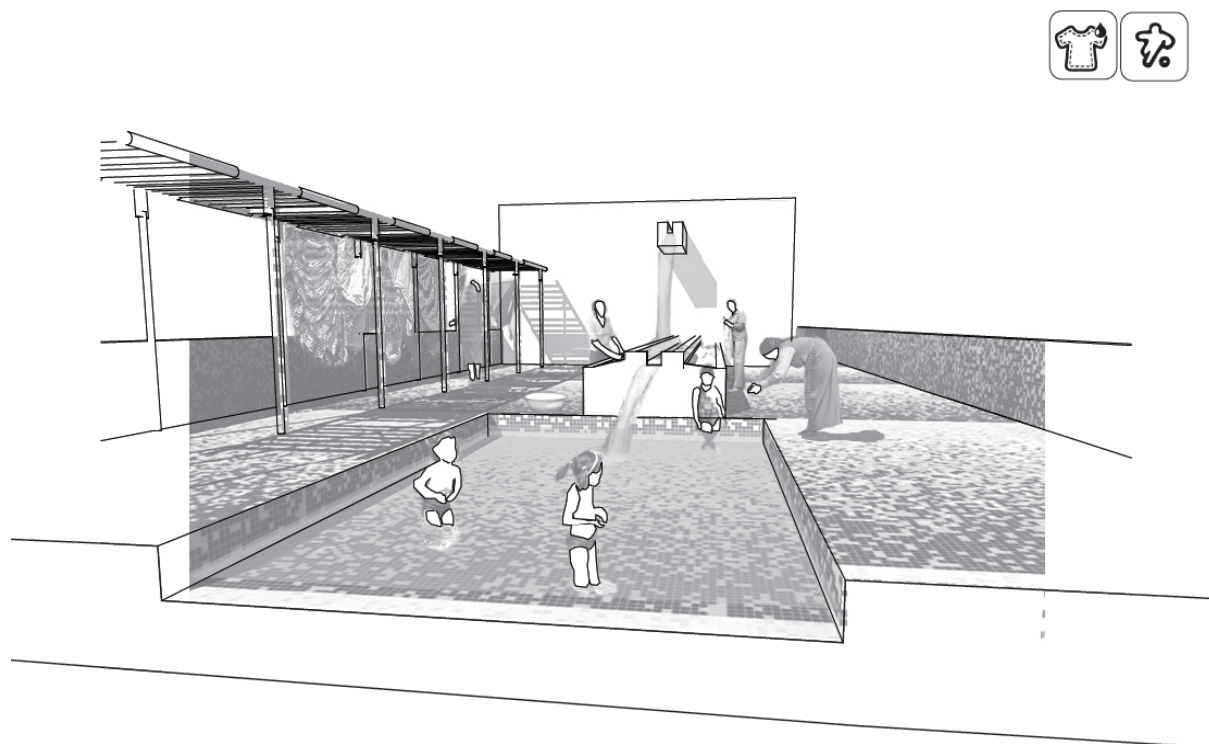


Figure 63 Perspective. Drawing depicting ordinary activities in communal space. [Image provided by the author]

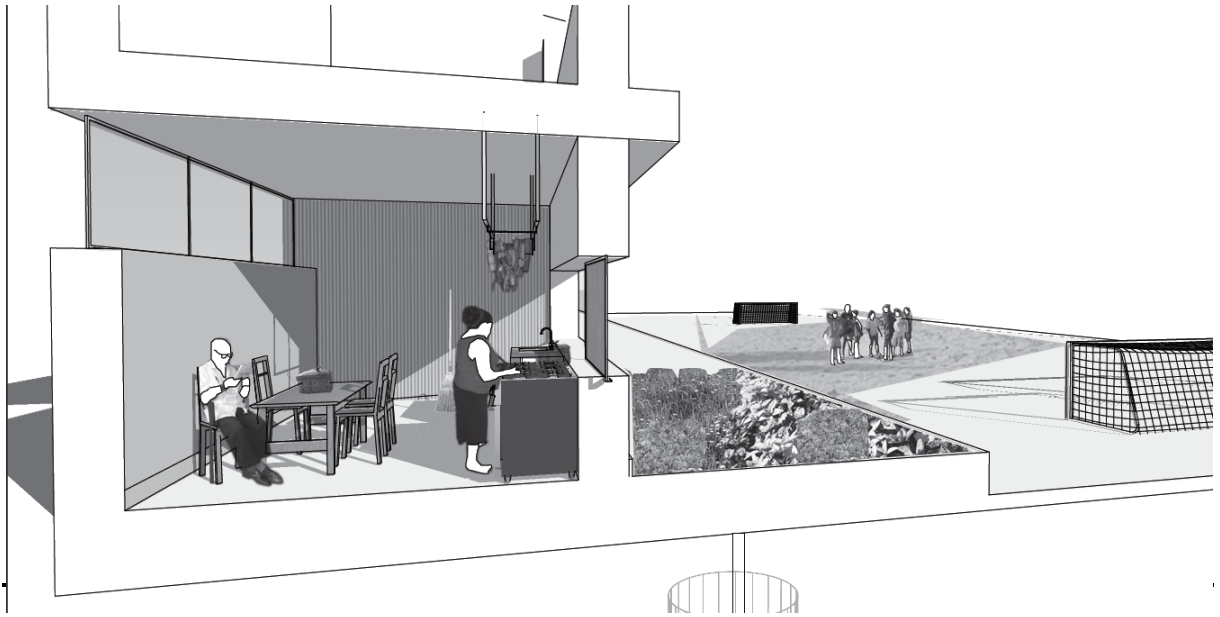


Figure 64 Diagram of program that supports a variety of domestic, recreation and community activities. Also taking into consideration sustainability strategies to reduce environmental impact as well as to reduce the cost of services. Housing units should be designed to allow opportunities for natural surveillance; residents should be able to have views to open spaces to ensure the security of the housing complex. [Image provided by the author]

Chapter 6: Precedents

Elemental Quinta, Chile



Figure 65 Exterior Façade [Aravena, Alejandro, Verb crisis]

Infill solution designed by Alejandro Aravena. The project is a housing prototype comprised by a series of concrete prefabricated towers and voids that allow the residents to infill the voids with extensions of the initial unit. The housing system provides the owners the possibility to invest and improve through sweat equity their residence. The basic unit provides a sound structure as well as a architectonic rationale for the infill that occurs within the towers. This housing system offers an

an alternative for public housing, where the dweller has control on the quality and design of its own residential space.

Escandon Loft, Mexico City



Figure 66. Loft escandon [<http://www.jsa.com.mx>]



Figure 67. Interior view [<http://www.jsa.com.mx>]

Designed by Javier Sanchez, the project proposes the conversion of a warehouse into two story units. The architect left the original perimeter walls and perforated the warehouse to create a courtyard. The project form takes upon the idea of the Mexican *vecindades* having a narrow central corridor for the introduction of light and air. The importance of this precedent is the articulation of new residential units within the walls and frame of an abandoned warehouse.

Chapter 7: Social Intentions.

This thesis proposes a housing system, alternative to the squatter housing in Mexico that could potentially relocate people into the center of the city. The main strategy would be to replace and utilize the warehouses and factories of Atlampa to create housing and urban elements necessary to create a residential neighborhood, community and humane environment. Since many governmental organizations are unable to suffice Mexico's housing demands this thesis is proposing a system in which social organizations can subsidize and provide a housing solution for specifically for people with less than five Mexican minimum wages and without the opportunity to receive governmental assistance. The thesis proposes to proactively correct the process in which squatter cities are created by providing a system in which infrastructure and structure are provided in the initial phase of construction; rather than the traditional process where infrastructure is provided after the construction of the slums, in a process of formalization and legalization. The purpose of providing the basic elements is to enable the basic services from the beginning enabling the opportunity to create a humane environment.

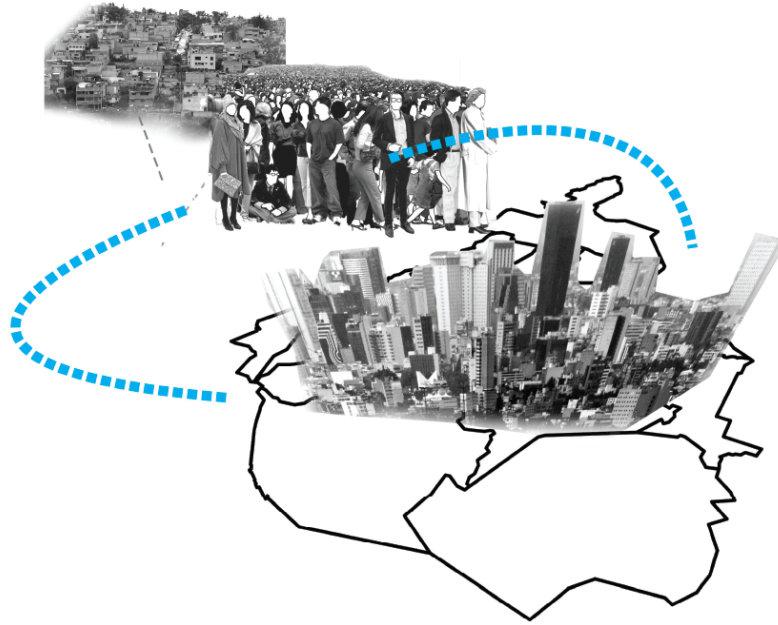


Figure 68 Diagram of Social Intentions. Relocate people from the slums to the center of Mexico City. [Image provided by the author]

This thesis proposes the involvement of two social organizations that provide social improvement to the slums of Mexico City. The Secretariat of Social Development (SEDESOL) and the Secretariat of Public Works (SOPS), both organizations subsidize public works such as water, drainage, electricity services and roads into the slums once they have become formalized. The SEDESOL and SOPS will be in charge of providing and subsidizing a structure and infrastructure in the neighborhood of Atlampa. Once the basic elements are built, these two organizations will decide and assign the ownership of the units. The units will address people receiving less than 5 minimum wages and receiving no governmental assistance. The future residents will finalize the construction process of the unit. The owners of the units can form cooperatives to finance construction materials.

SEDESOL+SOPS



Figure 69 Diagram Representing Construction Process. [Image provided by the author]

Chapter 8: Urban Design.

The character of the neighborhood of Atlampa is still primordially industrial. Since Atlampa is going through a process of revitalization it would be necessary to include urban elements that could potentially integrate the neighborhood and provide a space for social interaction, commerce and recreation. Since many of the warehouses have been replaced with public housing, this thesis proposes to replace some of the factories and warehouses that are not in use or that could be located in other industrial areas. The thesis proposal is to replace the industrial buildings of Atlampa with residential complexes articulated with open spaces. The change in land use throughout Atlampa has been gradual, changing from industrial to residential. This thesis will exemplify how the industrial blocks that comprise this neighborhood can be intervened to create residential complexes; this thesis will also recommend areas where other architects and developers could propose housing units, allowing a balanced mix of industry and residence. The idea of proposing a master plan as well as other areas where other architects could intervene is to create an idea of mixed income neighborhoods. Lost cities in Mexico are socially and economically segregated, whereas in the center of the city the development of high density has created mixed income neighbors. The idea behind mixed income neighborhoods is to decrease economical segregation as well as integrate a sector of the population that will provide economic resources to the area. The introduction of mixed-income residents could allow the interaction across residents, a cultural behavior that already happens in the rest of the city. Providing housing areas for middle-income residents can provide better resources as well as employment opportunities and social models;

with the underlying idea of promoting economic growth and reversing the social condition of poor alienation.

Urban Intervention Strategy.

The site of Atlampa allows the opportunity to remove several of the warehouses and factories in the site because they are currently, abandoned, underutilized or for sale. Since the intervention will comprise housing units, and an urban open space it might be necessary to remove several unutilized buildings to give space to intervention. Some of the factories in Atlampa could be allocated in other parts of the city to give space to growing housing demand. Some factories buildings will remain for the economic improvement of the project, none of the housing or civic buildings in the project will be replaced or removed.

Ever since the neighborhood of Atlampa was created it followed the grid of the Spanish traza, having the same orientation and articulation to main roads. Nonetheless some of the block sizes were altered in order to accommodate large warehouses or factories, merging two blocks into one and distorting slightly the connectivity of streets to the integrity of the original grid. This thesis proposes to reinterpret the original grid to allow average size residential blocks and appropriate connections to open spaces and main arteries. Some blocks will maintain the same proportions to allow the factories and economic benefactors to remain in the neighborhood.

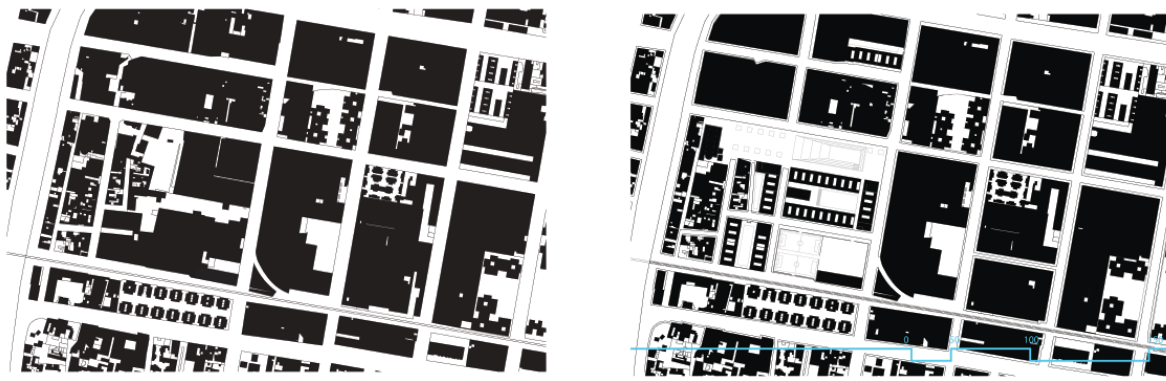


Figure 70 Figure Ground. Before and After intervention, illustrating introduction and continuation of streets as well as the creation of an open space for the neighborhood and the creation of a school yard. [Image provided by the author]



Figure 71. Soft Site Diagram. The blocks in dotted lines are show the areas that could be replaced by residential units. Removing irrelevant factories and warehouses. [Image provided by the author]

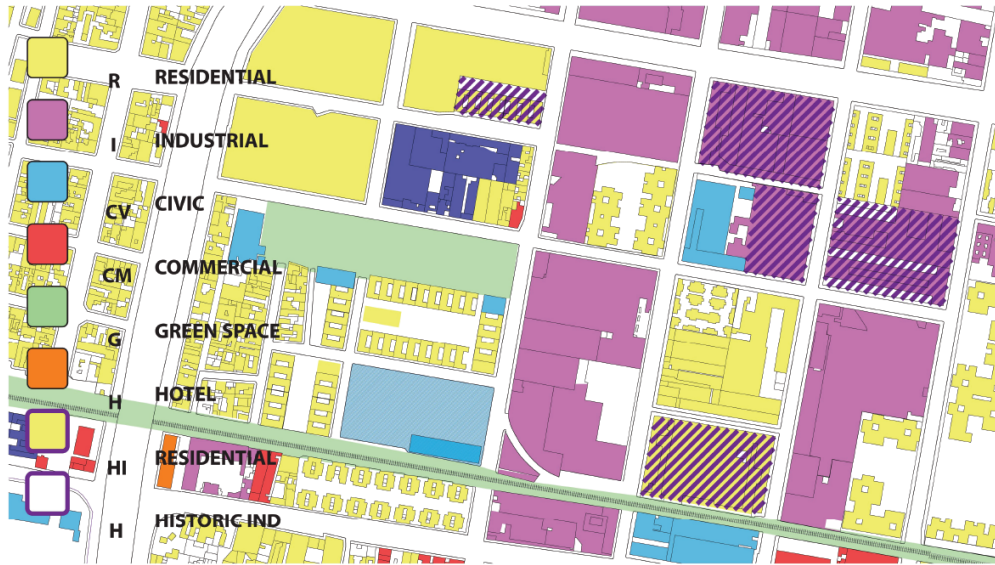


Figure 72 Diagram with Proposed Land Use. The site plan proposition consists of transforming some blocks from industrial to residential. A portion of the industry in the site will be kept because it could potentially offer employment opportunities to residents. The factories prove to be economically beneficial to the neighborhood, bringing resources as well as security into the area. [Image provided by the author]

Urban Spaces.

The urban intervention and placement of housing units of the neighborhood of Atlampa is driven by the availability of land, provided by abandoned warehouses and the location of the two main civic elements in the area: an elementary school and a church. The thesis proposes urban space articulated within the urban grid and utilizing the spaces that are already in the site. The thesis proposes the creation a civic –religious an urban park articulated with the church, the Coca-cola factory and the train tracks. The train tracks to the south would be revitalized and converted to a greenway that would lead to the National Public Library Jose Vasconcelos and the major avenue of Reforma.



Figure 73. Church of the Santo Nino Jesus in Atlampa [Image provided by the author]

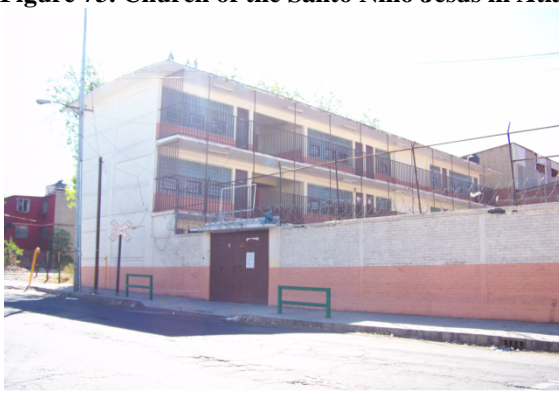


Figure 74 Elementary Public School [Image provided by the author]



Figure 75. Diagram of Urban Intervention. Connecting the public plaza and school yard to civic elements and street network. The streets are articulated to the housing and urban spaces with streets shaded with typical trees found in Mexican streets..

The urban intervention proposes to modify the largest sized block, removing the Will and Baumer and Elefante factories and keeping the residential unit in the west northwest portion of the block. The factories will be substituted by a civic religious plaza to the north, a school yard to the south and housing units. The greenway and urban park will have not only the purpose of creating space for recreation but also spaces for permeable surfaces, allocating areas for water absorption into the cities aquifers.

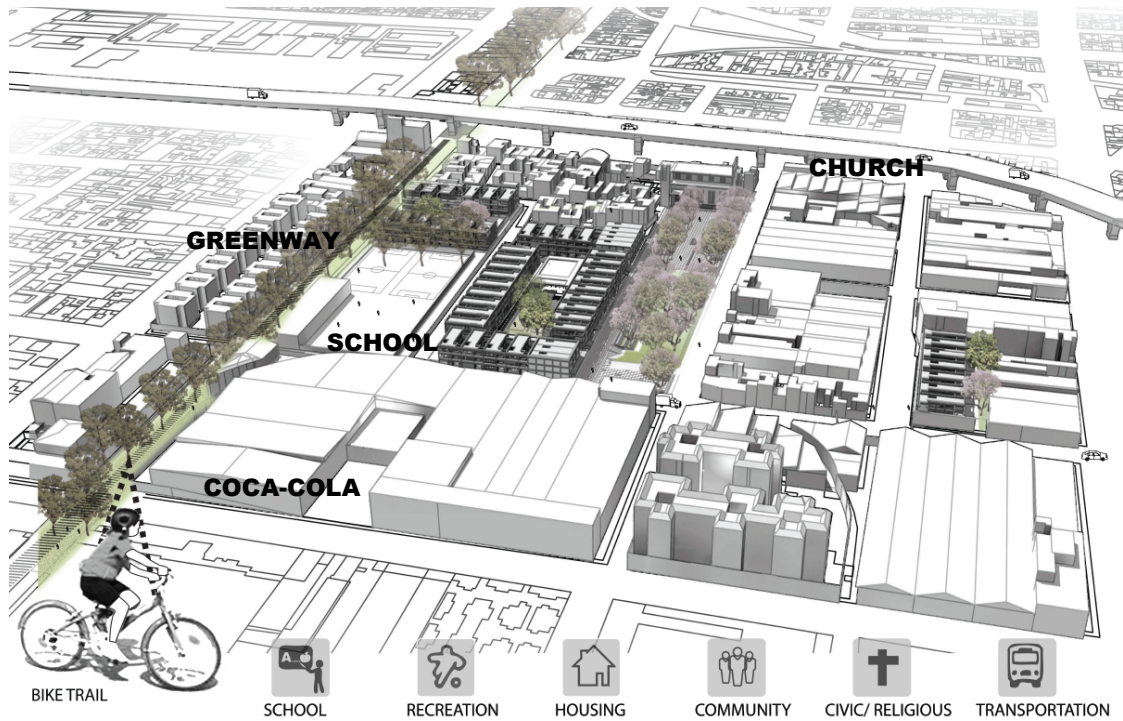


Figure 76. Aerial view of intervention. [Image provided by the author]



Figure 77 Aerial Photographs. Possible connections from Atlampa to amenities and arteries. [Image provided by google maps]



Figure 78 Perspective of Greenway. The train track utilized as a bike trail that connects to the National Library Vasconcelos and Reforma Avenue. A recreational space in the train tracks could also help to animate the isolated train tracks. [Image provided by the author]

The central area of Mexico City offers a great variety in museums, libraries and plazas, elements that are mostly utilized by people in proximity. The urban spaces are utilized to connect and integrate the neighborhood to other important spaces of the city. The residents of squatter cities are culturally segregated, unable to gain access to events and spaces that could enrich and improve their lives.

Chapter 9: Architectonic Proposition.

The design of the residential complexes articulates to the open urban spaces as well as to the civic buildings. The unit complexes provide connections to the street and plaza. Each of the housing complexes will be granted with a courtyard space in the center and a community space. The street level of the space will be able to be utilized by occupants with a modest commercial space. The community building within the housing complex will be utilized according to the necessity and demography of the occupants. For instance the community building could provide a space for a daycare during the morning a senior center during the afternoon and a meeting place during the weekends. The use of the space would be upon the determination of the occupants. The courtyard will create a green permeable space allowing occupants to grow alimentary products for personal use or small-scale vending.

The housing units will be created by a structure supplied of services that will enable owners to complete and infill their own units. The thesis proposes that the SEDESOL and SOPS will subsidize and compensate the price of the structure and basic services while the occupants will cover the price of the units and infill generating sweat equity for the occupants. This process of construction will give self-determination to the occupants to decide the layout and tenancy of their units. The prototype of the housing units will allow the occupants to rent, sell or fully occupy the units. The subdivision of the unit will allow the flexibility to set a portion for rent or sale will allowing the occupants to create an extra source of income.

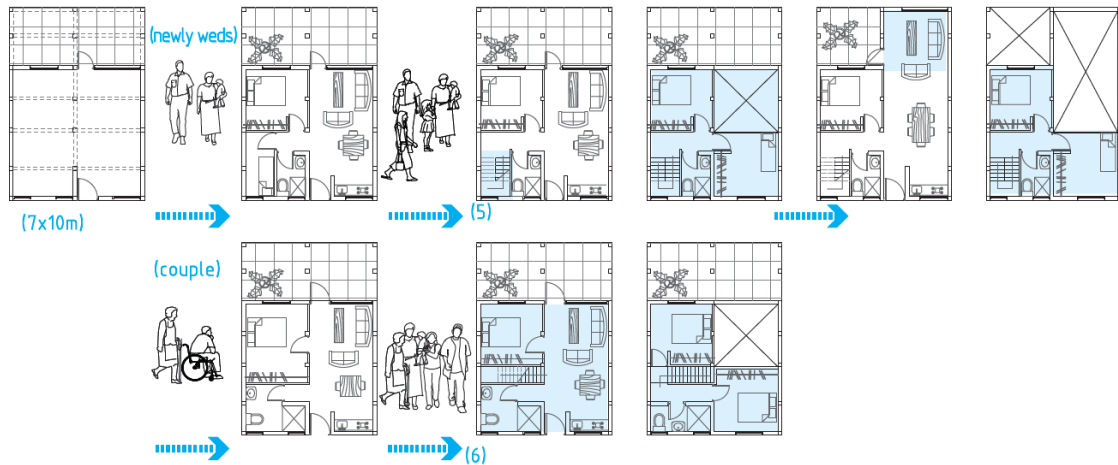


Figure 79. Occupancy scheme. Diagram of how flexibility and grow in housing unit. [Image provided by the author]

Unit Design Strategy.

The unit will be comprised by a structure of prefabricated columns and concrete slabs, shear lateral walls and low concrete walls. The structure will be served by electrical, water and gas connections. The first level facing the street will incorporate a panel that will open as an awning; this element will allow the occupants to utilize this space as a commercial space. The rest of the walls and the interior walls will be constructed by the occupants with the intention to promote sweat equity and self-construction.

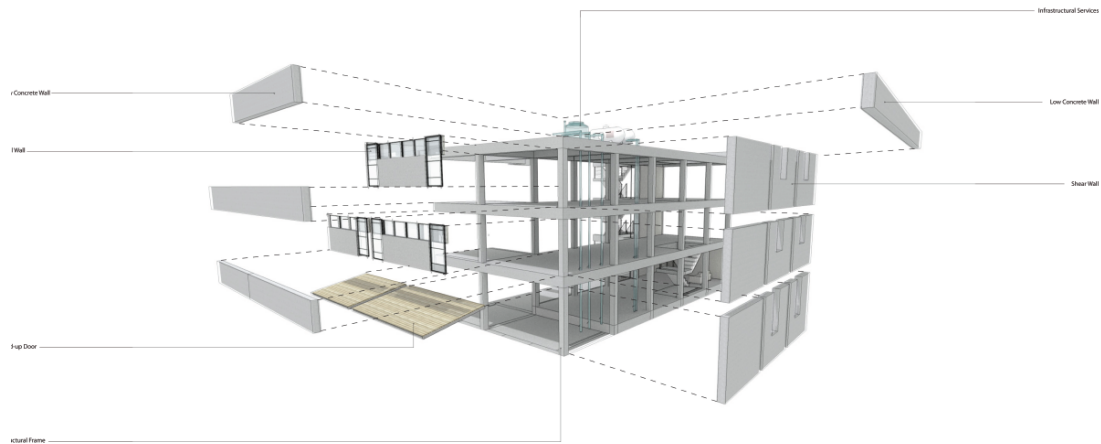


Figure 80. Axon of Housing Unit. [Image provided by the author]

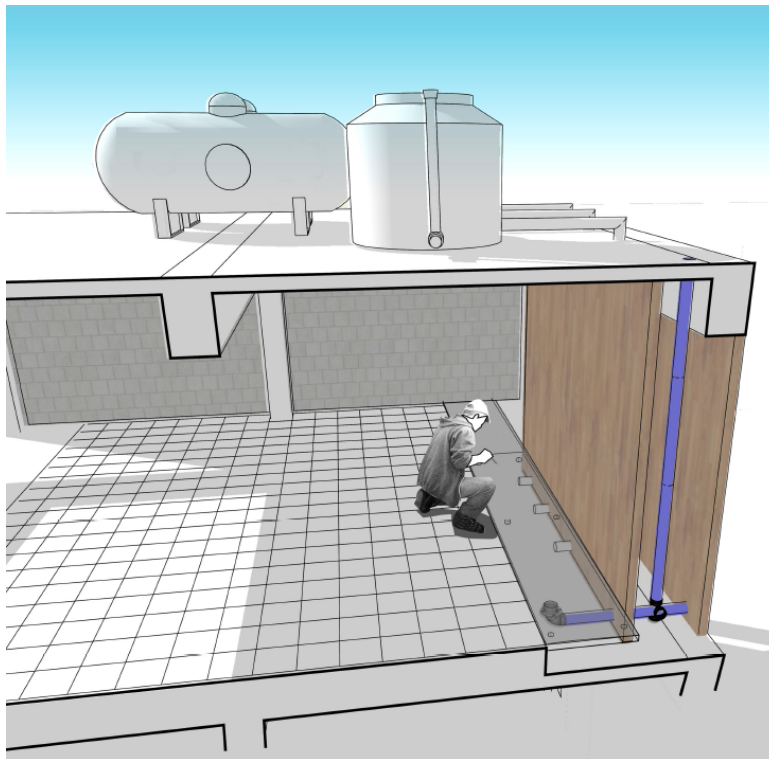


Figure 81 Services Diagram. A flexible and accessible disposition of plumbing services allows residents to decide the layout of rooms. [Image provided by the author]

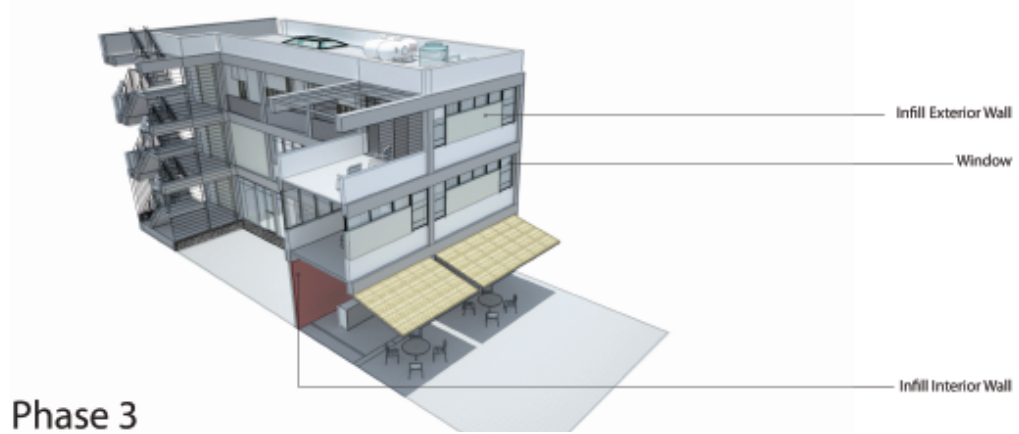
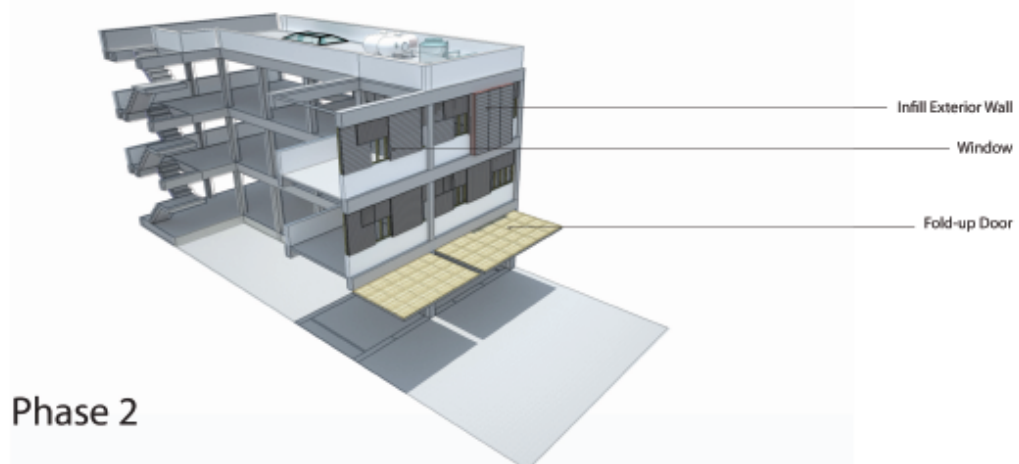
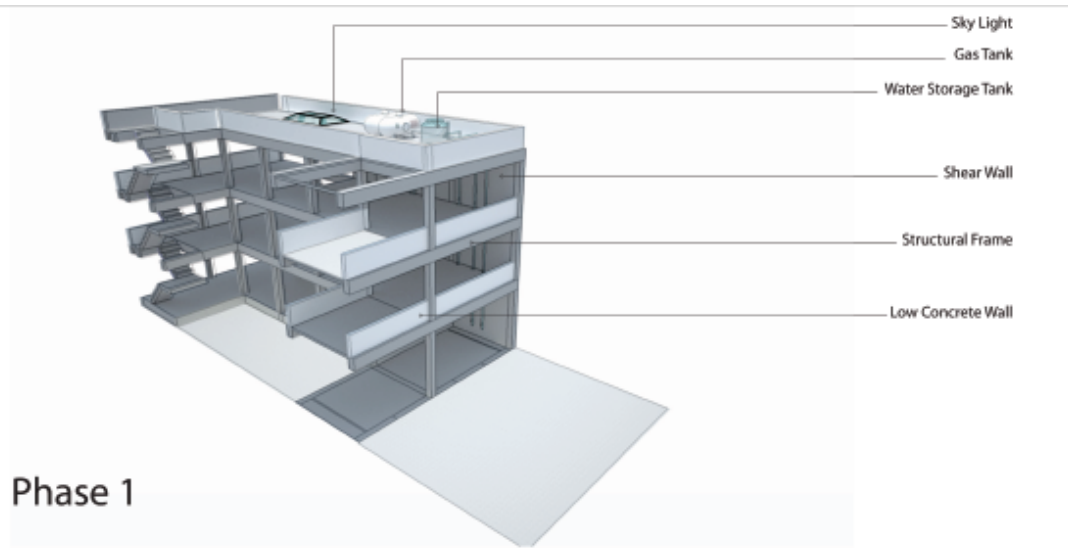


Figure 82 Design Phases. [Image provided by the author]

The intention to provide the basic elements of housing is to reduce the price of construction financed by the SEDESOL and SOPS. The rest of the unit construction will depend upon the owners. In the initial phase the occupants will receive the basic infrastructure and structure, the second phase will be built upon temporary scrap material utilized in slum construction, such as scrap aluminum and wood. As the dwellers gain upward mobility they will be able to replace scrap materials with solid materials formalizing the housing unit.

The housing unit will be able to support several legal structures enabling freedom to the proprietor to determine its occupancy and use. One possibility the owner could create would be to sell each of the story units creating the legal structure of a condominium , where the staircase, roof terrace and services would be considered common ground. One single family could own the entire condominium and lease the other stories. The other legal structure the unit could provide would be a cooperative, with an organization owning all the buildings, and each proprietor having a share of the stock and a proprietary lease.

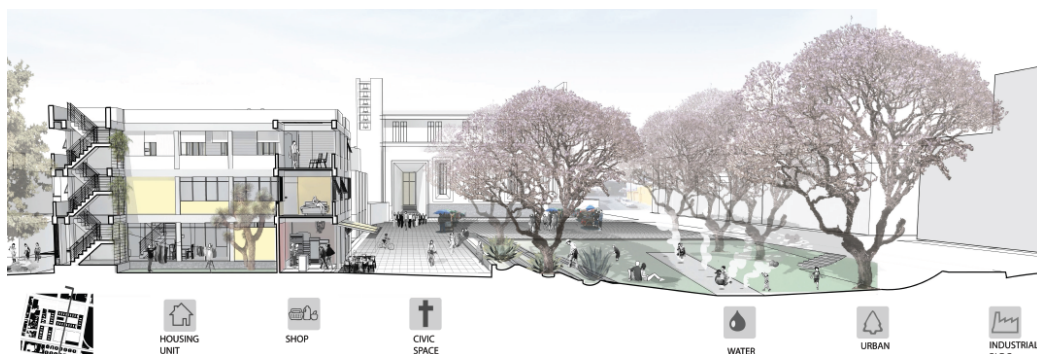


Figure 83. Housing unit in relation to urban proposal [Image provided by the author]



Figure 84 Perspective section of housing unit. [Image provided by the author]

The housing structure will also be able to adapt to the different conditions of the neighborhood of Atlampa. The structure could be utilized as an infill condition for historically preserved warehouses and factories. The land use in most of the historical factories can be changed nonetheless the perimeter walls must be preserved since they are protected by the INAH. Introducing residential units within historical buildings ties the neighborhood to the history and purpose of its creation. It also creates variety across the different types of housing structures.

INFILL CONDITION



Figure 85 Site Diagram. The site diagram shows areas where residential infill could be inserted in abandoned warehouses. [Image provided by the author]



Figure 86. Design proposal. The housing structure could be utilized as a system to support perimeter walls as well to create residential units. [Image provided by the author]



Figure 87 Site Plan [Image provided by the author]



Figure 88 Section of Housing Units and Plaza [Image provided by the author]



Figure 89 Courtyard Space. [Image provided by the author]

Chapter 10: Conclusion.

The research of this thesis has been able to prove the urgency for creating humane housing for the most economically distressed citizens of Mexico City. Mexico as a country will not be able to progress until equal opportunities of living and employment are provided to all citizens. This thesis project proposes to address the overwhelming conditions caused by economical segregation, advocating for upward mobility and life improvement for the neglected. The social housing and squatter housing designed today in Mexico City do not provide the humane and social elements that improve people's lives, public housing become marginalized unsafe and overcrowded spaces. These hostile conditions promote poverty through many generations, holding back the economy and progress of the nation. The research attempts to create a scenario in which a social organization could be involved in the creation of a housing prototype, subsidizing a portion of the construction; but also understating the characteristic process of slum construction. Contemporary public housing in Mexico reinterprets housing necessities in quantity of units forgetting the quality of living environments. The creation of housing units requires the understating of the human behavior and collective memory of the users. This research questions the culture of Mexico City and reinterprets the organized chaos the city embodies into a housing system that would potentially integrate the diversity of Mexican culture.

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